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SUSTAINING BIODIVERSITY CONSERVATION IN AND AROUND NYUNGWE NATIONAL PARK (NNP)

**Associate Cooperative Agreement N° Aid-696-La-10-00001 under Leader
Cooperative Agreement N° Eem-A-00-09-00007-00**

***Annual Report:
1st March 2013 – 28th February 2014
(Year 4)***

Disclaimer

“This report is made possible by the generous support of the American people through the United States Agency for International Development (USAID). Its content is the responsibility of the Wildlife Conservation Society, and does not necessarily reflect the views of USAID or the United States Government.”

LIST OF ABBREVIATIONS

ADENYA: Association pour le Développement de Nyabimata (local NGO in Nyaruguru area)
ANICO: Animateur de Conservation
CI: Conservation International
DAI: Development Alternatives Incorporation
DEO: District Environment Officer
ECOTRUST: Environment Conservation Trust of Uganda
EES: Energy Efficient Stove
EWSA: Energy, Water and Sanitation Authority
GEF/PAB: Protected Area Biodiversity Project, supported by Global Environmental Facility (GEF)
GIS: Geographical Information System
GoR: Government of Rwanda
IISD: International Institute of Sustainable Development
INECN: Institut National pour l'Environnement et la Conservation de la Nature (Burundi)
KCCCEM: Kitabi College for Conservation & Environmental Management
MI: Media Impact
MIST: Management Information System
NGOs: Non Government Organisations
NNP: Nyungwe National Park
PA: Protected Area
PES: Payment for Ecosystem Services
PIC: Partners In Conservation
PMP: Performance Management Plan
PNV : Volcanoes National Park
PNPT: Le Pilier de la Nature et de la Promotion du Tourisme (Local Cooperative in Banda area)
R&M Warden: Research & Monitoring Warden
RAB: Rwanda Agricultural Board
RBM: Ranger-Based Monitoring
RBS: Rwanda Bamboo Society
RDB: Rwanda Development Board
REDO: Rural Environment and Development Organization
REMA: Rwanda Environmental Management Authority
RNRA: Rwanda Natural Resources Authority
RS: Revenue Sharing Program
SACCO: Saving and Credit Cooperative (at sector level)
ToRs: Terms of Reference

USAID: United States Agency for International Development

USFS: United States Forest Services

VSO: Volunteers Service Overseas

WCS: Wildlife Conservation Society

Y1, 2, 3, 4, 5: Year one, two, three, four and five of project implementation

TABLE OF CONTENTS

A. Executive Summary	6
B. Project Results	8
C. Discussion of Project Results	26
D. Success Stories	27
E. Complimentarity with Other Development Programs	28
F. Training	28
G. Cross-Cutting Issues	30
H. Appenix I <i>Nyungwe National Park Ranger-Based Monitoring</i>	32
I. Appendix II <i>Assessment of the ANICO Program at Nyungwe National Park</i>	49
J. Appendix III <i>Looking Forward Through the Past: Progress, Challenges, and Lessons Learned by WCS in Nyungwe National Park, Rwanda 1988-2013</i>	69
K. Appendix IV <i>Nyungwe National Park: Conflict Mapping</i>	95
L. Appendix V <i>Gender Analysis for USAID/Rwanda “Sustaining Biodiversity Conservation in and Around Nyungwe National Park” Project with Wildlife Conservation Society</i>	101
M. Appendix VI <i>Summary of Planned Y5 Activities</i>	109

A) EXECUTIVE SUMMARY

This report concerns the activities undertaken in Y4 (period covered: March 1st 2013 –February 28th 2014) of the project “*Sustaining Biodiversity Conservation in and around Nyungwe National Park (NNP)*” implemented by the Wildlife Conservation Society (WCS), as per the approved Y4 Workplan. The project, funded by USAID, aims at building the capacity of the Rwanda Development Board (RDB), the government agency in charge of the management of National Parks in Rwanda, to sustainably manage Nyungwe National Park (NNP) and conserve its rich biodiversity.

The overriding goal of the project is that Rwanda benefits from the conservation of wildlife and sustainable use of ecosystem services in Nyungwe National Park. The principal objective is to improve the capacity of RDB to sustainably manage the park’s resources and address specific threats (fire, poaching, illegal extraction, etc.) to the park and specific species of concern.

During Y4, we have been able to build on the work completed in the previous years in relation to the 6 major strategies being implemented through this cooperative agreement in a number of important ways:

Strategy 1- Strengthen RDB Biodiversity and Threats Monitoring Capacity

The 24-month process to hand over the Ranger-Based Monitoring program to RDB was finalized as planned, the training manual was translated into Kinyarwanda and tested, and a document highlighting the steps of the process, achievements, challenges and recommendations for a smooth implementation was developed and shared with RDB.

Yearly monitoring of Nyungwe’s birds and mammals was resumed early in Y4. Additionally, the team recommended carrying out a park-wide survey every 5 years, in order to have a broad picture of wildlife trends across the park. Given that the last survey was carried out in 2009, the next is planned in 2014 (Y5).

Strategy 2: RDB and Districts’ capacity to manage conflict, mitigate threats and manage tourism is strengthened

The implementation of the conflict mitigation strategy (developed in partnership with IISD in the previous years), saw the ANICOs involved at many levels, including: community forums, reporting of illegal activities, helping to prevent and fight fires, promoting cooperatives and helping to identify revenue generating opportunities, whether through revenue sharing or other channels, etc. The regeneration of the targeted plots (for a total of 9 ha) of forest affected by wild fires has progressed. (Although the Y4 Workplan originally listed 12 ha to be regenerated, it was determined only 9 ha could be reasonably regenerated within the allotted time.) Additionally, 30 ha of fire degraded forest underwent fern-cutting treatment implemented by a local cooperative from Banda (*Le Pilier de la Nature et de la Promotion du Tourisme - PNPT*), under technical supervision and training by WCS staff. Tourism impact monitoring was carried out implementing the LAC methodology by RDB, with WCS support in planning, training and data entry. Chimpanzee habituation data collection sheets and protocols were reviewed and the park staff trained, in order to monitor habituation progress and impact. Regular planning meetings and coordinated patrols between Nyungwe and Kibira National Parks were carried out quarterly.

Strategy 3: Strengthening the knowledge and interest of the Government of Rwanda to develop and support PES policies

The implementation of this strategy, as planned in the Y4 workplan, experienced setbacks mostly due to the different activity implementation timeline of the leading government agency, REMA, on PES. While the PES task force meetings did not occur, REMA did go ahead and commission a study on developing guidelines for PES implementation in Rwanda.

Strategy 4: Develop Payments for Ecosystem Services (PES) schemes

The finalization of the project documents for the carbon management scheme for rural communities around NNP, has taken longer than anticipated, due to some communication issues with the implementing partner ECOTRUST. By the end of Y4, only the Project Idea Note (PIN) had been reviewed and approved by Plan Vivo, with the project's Technical Specification and PDD expected to be approved early in Y5.

The validation of WASSI-CB model results (initiated in Y3) was completed and the results presented to stakeholders during a symposium organized in Nyungwe. In addition, biophysical and economic assessments of Nyaruguru sub-catchment and the physical mapping of local beneficiaries of Nyungwe ecosystem services were carried out, with the results to be presented in Y5.

Strategy 5: Develop Sustainable Alternatives for Resource Use

Following from previous years' positive results on the effectiveness and adoption of energy efficiency stoves (EES), in Y4 a consultant conducted a feasibility study of producing EES in Nkungu by building a kiln in the area. A market assessment for EES in the area was also carried out, as well as an assessment of the management capacities of the cooperative members.

In order to promote bamboo development outside the park, thus reducing the pressure on Nyungwe's bamboo habitat forest, WCS has joined efforts with RDB in providing financial and technical support to the Revenue Sharing funded project (implemented by the local cooperative IMBERE HEZA in the Nyaruguru District) to establish a bamboo nursery. Additionally, working in close collaboration with Nyaruguru District authorities, WCS led the process of mapping all areas identified as potential sites for bamboo development.

Strategy 6: Implement Education and Outreach Program

In Y4, the education and outreach program focused on the implementation of the education and outreach strategy, the use of the materials produced and the implementation of the activities by the local educators (teachers and ANICOs). RDB and WCS played mostly a supportive and monitoring role, visiting the 20 pilot schools regularly and providing technical support to the educators. In addition, two large social marketing events attracted thousands of attendees and were an effective complement to the ANICOs' focused 'local forums.' Further details discussed in Project Results below.

B) PROJECT RESULTS

Strategy 1: RDB's Biodiversity and Threats Monitoring Capacity is Strengthened

The long-term monitoring of biodiversity and threats is essential in guiding park management decisions and assessing the effectiveness of conservation strategies. For this, Ranger-Based Monitoring (RBM) was introduced in NNP in 2003, receiving support from WCS over the past 10 years. With 75 rangers, who are regularly involved in park protection patrol and RBM data collection, 3 zones coordinators, a research and monitoring warden, and a monitoring agent who are involved in RBM data entry and analysis, RDB is the natural executor and user of these activities. Under the current USAID Agreement, WCS and RDB developed and agreed upon a 24 month work plan (started in June 2011), with the objective of transferring the knowledge, skills, and responsibility of ranger-based monitoring system from WCS to RDB. As mentioned above, in Y4, the handover process was finalized as planned, the training manual was translated in Kinyarwanda and tested, and a document highlighting the steps of the process, achievements, challenges and recommendations for a smooth implementation was developed and shared with RDB.

Nyungwe long term monitoring of bird and mammal population, initiated in 1997, was restarted in Y4 after a gap in data collection of one year (2012). This follows recommendations from the Nyungwe biomonitoring program review, carried out by WCS, RDB and KCCEM. Additionally, the team recommended carrying out a park-wide survey (41 transects throughout the park) every 5 years, in order to have a broad picture of wildlife trends across the park. Given that the last survey was carried out in 2009, the next is planned in 2014 (Y5).

Summary of targets and progress for Strategy 1 in Y4:

<i>Work-plan targets</i>	<i>Progress</i>
*10 RDB & WCS staff trained in research / survey, database management and analysis	<i>Partially achieved/Partially postponed to Y5.</i> The review of Nyungwe biomonitoring program was jointly done by WCS, RDB and KCCEM staff in June 2013; database management and analysis discussed and presented in a report analyzing 15 years of biomonitoring data. Further training will be planned in Y5 Q1 following the survey design and the finalization of the training manual.
Biodiversity survey designed and budget detailed for NNP in collaboration with RDB	<i>Partially achieved.</i> Transect survey design and budget detailed; camera trapping component of the design to be finalized in Y5, Q1.
1 training manual produced (10 copies distributed) to provide guidance on research protocol and data management	<i>Delayed/Postponed to Q1 Y5.</i> Training manual to be finalized in Y5 Q1 after the survey design is finalized and before the training.
*60% RDB patrols guided by analysis of MIST data	<i>Progress as expected.</i> 58% of patrols have been guided by analysis of MIST data, as reported by the Head of Zones.
RBM Handover to RDB finalized	<i>Achieved.</i> Process concluded; RBM/MIST training manual in English & Kinyarwanda available.
RBM use by RDB monitored for its effective use in park management	<i>Progress as expected.</i> RBM data regularly entered and used in guiding patrol planning.
*10 RDB staff trained in GIS MIST through refresher course	<i>Achieved.</i> Additional training provided to Head of Zones (to address capacity gaps caused by personnel changes).
4 translated quarterly reports disseminated as part of facilitating sharing RBM results among the RDB departments and key partners	<i>Partially implemented.</i> RBM results regularly shared, however this is mostly done by oral presentation or using the English quarterly report; a standard format has been drafted to facilitate RDB

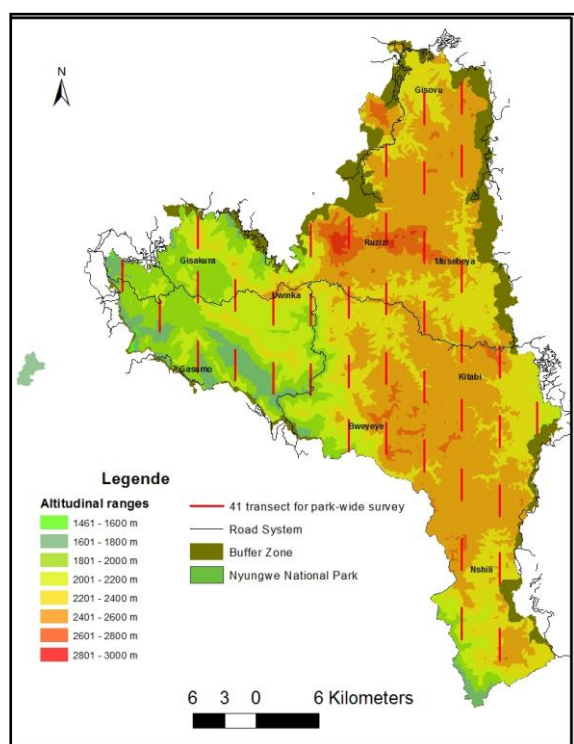
	Park Wardens in disseminating these results.
Climate data regularly collected, data quality controlled, data analyzed, report available	<i>Progress as expected.</i> Data secured and available online.

* Refers to indicators captured in the PMP.

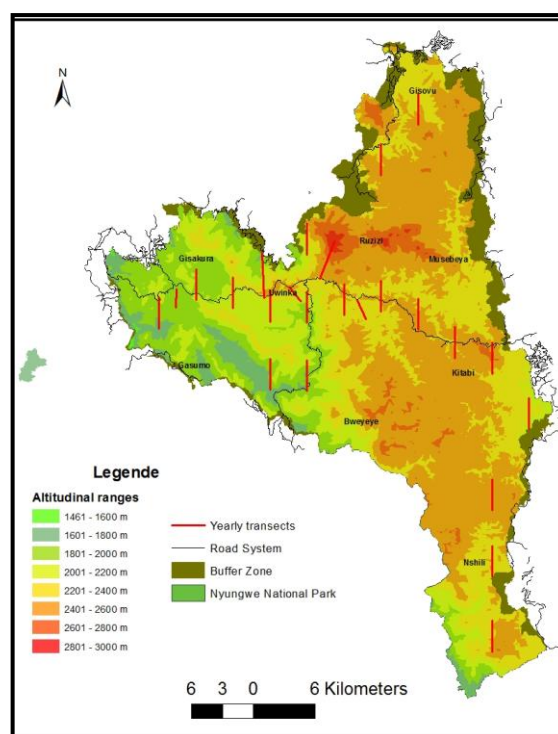
Output 1: Biological Surveying capacity of RDB staff is strengthened

Prepare & design detailed biodiversity survey for NNP with RDB.

WCS, RDB and KCCEM staff participated to the process of reviewing Nyungwe Biomonitoring Program, led by Senior WCS Scientists, Drs O'Brien and Plumptre. The team approved the restart of the yearly monitoring of birds and mammals, an annual, 'low intensity' survey which was revised to include 21 transects located through the centre of the park (with easy access from the road). For the park-wide survey (41 transects throughout the park), the plan is to implement it every 5 years. Given that the last survey was carried out in 2009, the next is planned in 2014 (Y5). Additionally, it was decided to add camera trapping to the line transect survey, in order to capture also the smaller and more elusive species.



Park-wide biodiversity survey design



Annual biodiversity survey design

Train WCS and RDB senior staff in research/survey design, data management and analysis.

The review of Nyungwe biomonitoring program was jointly done by WCS, RDB and KCCEM staff in June 2013, including survey design (though not including the camera trapping component). General database management and analysis was discussed and presented in a report analyzing 15 years of biomonitoring data. However specific data management and analysis was postponed for Y5, given the need to first finalize and adopt the final monitoring plan (including the new component of camera trapping). Further training will be planned in Y5 Q1 following the finalization of the survey design and the training manual.

Produce/secure training manuals to provide guidance on research protocols and data management.

Postponed to Y5, given the need first to first finalize and adopt the final monitoring plan (including the new component of camera trapping).

Output 2: The Capacity in Park Protection and threat monitoring and assessment for RDB staff is strengthened.

Finalise RBM/MIST handover and monitor its use for effective park management

The process of handing over Ranger-Based Monitoring (RBM) management to RDB was accomplished as planned during Y4, with additional refresher training of trainers carried out, the translation of the training manual in Kinyarwanda and its testing among the rangers. A document reviewing the handover process and including identification of key recommendations to secure effective implementation was shared with RDB (Annex I).

Throughout this reporting period, RBM data have been collected on schedule, collated from the patrol posts for analysis at park HQ with minimum delays, and monthly RBM reports availed with minimum assistance from WCS. Overall, 58% of patrols were guided by RBM results.

To increase efficiency in threat detection, small groups of ex-poachers accompanied patrols in the field on 2 occasions: their skills in detecting signs proved the approach a successful one in supporting RBM and law enforcement activities.

Organise refresher course in GIS and MIST for HZ and RM wardens

18 RDB park staff members were trained in GIS to supplement the training they received in RBM/MIST GIS in the previous years. With the acquired skills and knowledge in GIS, park staff is able to map the distribution of threats/illegal activities with the park and its surrounding areas to facilitate quicker management intervention by park managers whenever it is required. Towards the end of the handover process, a 5-day training of trainers was organized for 15 RDB staff, in mid July 2013. During this training the Kinyarwanda version of the RBM manual was tested and slightly readjusted after feedback. Both manuals are now with RDB for signature and adoption.

Even after the process was completed, WCS provided a refresher training in various aspects in MIST GIS, specifically targeting the newly appointed the head of zones and monitoring agents.

Facilitate the sharing of RBM results on a quarterly basis among RDB/NNP departments and key partners

Quarterly RBM reports have been regularly shared; however this is mostly done during oral presentations at trainings and meetings, both involving RDB departments and key local partners (ANICOs, Sectors, Districts). A standard format has been drafted to facilitate RDB Park Wardens in disseminating these results.

Output 3: Capacity to monitor and model climate is strengthened, and baseline assessment completed

Secure regular data collection, extraction, quality control and analysis of climate data at Uwinka & Bigugu stations

The data collection and extraction from the Bigugu automatic weather station has been regularly done by WCS and RDB staff. Nyungwe climate data is now available online, and can be accessed at the link below.

<http://www.albertinerift.org/initiatives/ClimateChange/WeatherStationData.aspx>

Strategy 2: RDB and Districts' capacity to manage conflict, mitigate threats and manage tourism is strengthened

Sustaining biodiversity conservation in and around NNP requires firm strategies to manage conflicts and mitigate threats. These conflicts and threats stem mainly from the pressures of the high demand for subsistence-related natural resources from a rapidly growing and poor surrounding population. Illegal harvesting of these resources creates friction between park managers who are trying to reduce illegal activities and the local communities who rely on these resources for their survival. Some costs to living in proximity to NNP, such as crop raiding by wild animals, exacerbate conflict, while at the same time some of the benefits (in terms of tourism revenue sharing as well as ecological services) are often not sufficiently understood.

Building on the conflict mitigation strategy developed in partnership with IISD in the previous years, and the associated trainings, in Y4 we focused on its implementation, supporting the active engagement of the ANICOs, which were involved at many levels (community forums, reporting of illegal activities, helping to prevent and fight fires, promoting cooperatives and helping to identify revenue generating opportunities, whether through revenue sharing or other opportunities, etc.). A thorough evaluation process of the ANICO structure and assessment of its sustainability (including workshops, meetings, interviews and a field visit to the ANICOs of Volcanoes National Park) was also spearheaded, involving all relevant stakeholders. Findings and recommendations were circulated and discussed.

The regeneration of the targeted plots (for a total of 9 ha) of forest affected by wild fires has progressed as planned in Y4. Additionally, 30 ha of degraded forest underwent fern-cutting treatment implemented by a local cooperative from Banda (*Le Pilier de la Nature et de la Promotion du Tourisme* - PNPT), under technical supervision of, and training by, WCS staff.

The promotion of linkages between user groups (beekeepers, potters, bamboo harvesters, ex-poachers/livestock groups) and relevant partners/government programmes has focused on assessing the feasibility of partnership with local Saving & Credit Cooperatives (SACCO) which could provide user groups with credits for revenue generating activities, following the VUP model.

RBD carried out tourism impact monitoring by implementing LAC methodology, with WCS support in planning, training and data entry. In order to monitor the progress of chimpanzee habituation, data collection sheets and protocols were reviewed and the park staff trained.

Regular planning meetings and coordinated patrols between Nyungwe and Kibira National Parks were carried out in order to address the trans-boundary aspect of shared threats such as mining, poaching, bamboo harvesting, as well to encourage the sharing of lessons learned in NNP in tourism development and to promote transfer of knowledge towards the neighbouring park in Burundi.

Summary of targets and progress for Strategy 2 in Y4:

<i>Work-plan targets</i>	<i>Progress</i>
*40 ANICOs and 5 DEOs trained (refresher, plus compensation & environmental laws and Revenue	<i>Achieved.</i> Training held on 27-29 May in Rusizi, 52 people trained.

Sharing proposal development)	
Basic equipment (raincoats, boots, notebooks, pens) received by 100% of ANICOs to enable them to carry out their volunteers' role	<i>Achieved.</i> Provided equipment included boots and raincoats, pens and notebooks, distributed during the quarterly meeting with the ANICOs.
*15 ANICOs (identified through the first year evaluation process) participating in exchange visits within NNP and among other parks as part of continuing ANICO capacity building process	<i>Achieved.</i> Study tour was carried out in January 2015, 8 ANICOs from Nyungwe were selected based on performance evaluations and a decision to focus on the quality of the visit, rather than the quantity of ANICOs (carried out in October)
Evaluation report on ANICOs' effectiveness in mitigating conflicts available	<i>Achieved.</i> Report available
*58 people (ANICOs and DEOs) supported in organizing 6 forums in high threat zones (mining, bamboo cutting, poaching, fires, crop raiding)	<i>Partially implemented.</i> 3 local forums were organized by ANICOs and held in Bweyeye, Kitabi and Rangiro sectors.
50% of ANICOs and DEOs supported in the use of the information from the quarterly (and translated) RBM results (assessed from the ANICO performance monitoring form)	<i>Progress as expected.</i> RBM presented and shared during meetings with ANICOs and DEOs; ANICOs involved in several community sensitization meetings using the RBM information.
Conflict maps available for 25-29 cells with high level of threats around NNP from supporting ANICOs in conflict mapping	<i>Achieved.</i> Conflict maps received, data reviewed and discussed during the four district meetings in Q3.
*58 people (ANICOs and DEOs) involved in organizing 4 facilitated outreach meetings on fire prevention before dry season	<i>Achieved.</i> ANICOs involved in the 2 pre-dry season planning meetings (in Rusizi and Kitabi), followed by 19 fire-prevention meetings (5 in Rusizi, 3 in Nyaruguru, 3 in Nyamagabe, 4 in Karongi, 4 in Nyamashke) organized by ANICOs in collaboration with local authorities.
4 coordinated Nyungwe-Kibira planned patrols carried out	<i>Achieved.</i> Four Nyungwe-Kibira coordinated patrols planned and organized.
*100 individuals reached as part of support to user groups (beekeepers, potters, bamboo harvesters, ex- poachers/livestock groups) around Nyungwe to facilitate linkages with relevant partners and government programmes / help organise the groups and register them as legal entities such as coops & associations	<i>Partially implemented.</i> A conceptual approach of partnering with the local Saving & Credit Cooperative (SACCO) to channel this assistance has been developed. This concept was enriched from discussions with local SACCOs.
9 ha recovered by end year 4 as part of helping to improve ecological conditions through assisted regeneration in the areas affected by fires in the past	<i>Progress as expected.</i> In progress: 3ha under treatment through fern cutting; 6ha process finalized, natural regeneration in progress.
*16 RDB staff trained as part of supporting and monitoring implementation of LAC methodology	<i>Progress as expected.</i> Refresher training organized and data collection initiated.
*16 RDB staff trained as part of strengthening chimpanzee tourism impact monitoring data collection and analysis	<i>Progress as expected.</i> Chimp data collection protocol reviewed, data being collected.

Output 1: Capacity to understand, manage and resolve conflicts is in place

Organise refresher training for ANICOs (including new recruits) and DEOs / including compensation and environmental laws / RS proposal development

A 'refresher training' workshop for Nyungwe's ANICOs (including training of new recruits) was conducted for two days in May 2013, and attended by 52 ANICOs. The revision sessions included information on: location, size, biodiversity and threats to Nyungwe National Park; structure, roles and responsibilities of ANICOs; conflict resolution techniques; laws and regulations governing conservation and the management of the park (including compensation law); Ranger-Based Monitoring results, etc. The second part of the training included

presenting the results and recommendations from the workshop on ANICO sustainability (see below) and following up on the idea of the performance contract. A form was detailed, approved by the participants and tested from June to September 2013, when it was evaluated during the annual ANICO evaluation (see below).

Provide equipment to ANICOs

All the 52 ANICOs who attended the May training workshop were provided with basic equipment (boots, raincoats, writing equipment) and the threat posters to be displayed at the sectors' offices and other public centres where ANICOs are involved in awareness raising events and meetings.

Organise exchange visits for ANICOs within NNP and between parks

An exchange visit by ANICOs to Volcanoes National Park (PNV) was carried out in January 2014. 8 ANICOs were selected for the exchange visit, in which a WCS Education and Outreach officer also participated, as well as one RDB Community Conservation Warden. The ANICO selection was based on performance in reporting and mobilising ex-poacher groups and women groups to participate in conservation related activities (discussed with all the members during the evaluation of October). During the exchange visit, the 8 ANICOs met with the ANICOs of PNV and the leaders of conservation and livelihood cooperatives. Discussions focused on the beginnings, progress and achievements of ANICOs at PNV. The meetings discussed the reasons for the "strength" of the ANICO structure at PNV, income generating activities undertaken by various cooperatives around PNV, ANICO involvement in conservation activities and the reporting system used. The group also visited several conservation and livelihood projects implemented by PNV local cooperatives –the ANICO cooperative in particular – so as to learn more about such initiatives and how to transfer such experiences to NNP. The core lessons learned are that ANICOs have a key role to play in community conservation, and that this is recognized both by the park authorities and the conservation NGOs who have either supported their cooperatives or relied on services by the ANICOs (which, in turn, has provided modest earning opportunities for the ANICOs).



Exchange visit from the Nyungwe ANICOs to the ANICOs of PNV: meetings and visits to ANICO cooperatives' activities.

Evaluate RBD/DEOs'/ANICOs' effectiveness in mitigating conflicts

Early in Y4, an assessment of the ANICO program was conducted to look at issues of sustainability and performance. First, a stakeholder meeting on sustainability on the ANICO system was held to identify ways of sustaining the ANICO structure based on other similar existing schemes elsewhere (ex. PNV) and learning from similar governmental structures such as the Health Community Workers. Additional objectives of the meeting included improving the reporting system and reviewing the methods of performance evaluation. The meeting generated important discussions on the issue of sustainability and provided recommendations on future actions to encourage and strengthen ANICOs' established cooperatives. The system of reports' submission was revised and the idea to elaborate a performance contract (under both RBD and Sector supervision and coordination) was discussed and steps forward to its implementation identified. Subsequently, ANICOs, WCS, RDB and sector staff were interviewed by two interns for this assessment. A report was produced, providing recommendations concerning: ANICO selection process, expectation management, incentives and institutional support (Annex 2).

In October, ANICOs meetings were organized in 4 districts bordering the park, to discuss the results of their annual performance evaluation (September 2012-August 2013) as well as to present and discuss the recommendations from the previous assessments and meetings to strengthen and sustain the ANICO structure. The evaluation showed that most of the ANICOs (85%) have been active in playing their expected roles such as reporting illegal activities as well as being intermediaries between RDB and communities. This is an improvement from last year's evaluation, when 65% of the ANICOs produced a report of any kind (to report illegal activities, to report on conflicts or on the activities carried out by the ANICOs). Among the issues raised by ANICOs is the Park authorities' weakness in providing follow up and feedback to issues & conflicts raised in the ANICOs' reports. During these meetings the 3-month performance based plans (for June-August) drafted in May by each ANICO (based on RBM findings and with the support of RDB and WCS staff) were reviewed. From feedback from the ANICOs, the plans helped them to orient their activities and were a useful tool also for local authorities to have a better understanding of ANICOs' roles. As next plans, each ANICO established the list of his / her own commitments, mostly based on the presented RBM results and on which the next performance evaluation will be assessed.

Output 2: Communities participate in conflict mitigation processes

Support ANICOs to organise local forums for addressing conflicts and improving park-community relationships

Local forums—bringing together local authorities, opinion leaders, members of security organizations—were organized by ANICOs, supported by WCS and RDB, in order to address conflicts and improve park-community relationships. 3 Local Forums were organized this year (Sectors of Bweyeye, Kitabi and Rangiro) to discuss conservation related problems occurring in each specific area (respectively, mining, poaching and both—in Rangiro). ANICOs' lead role in organizing these forums proved important for integrating with and appropriating their roles into local governance

In the forums, the discussions start with the presentation of the RBM results for each area, which prompts participation in the conflict solving process, including identification of clear roles and responsibility of the local authorities.

Support ANICOs and local authorities in the use of RBM results to sensitize community on NNP conservation

RBM results were used regularly throughout the year (above the 'once per quarter target'), during several platforms: at the 3 ANICOs forums, at the 4 ANICOs District meetings, and during the 'pre-dry season sensitization meetings'. While the formal presentation of the results (with graphs and charts) is mostly done by the Community Conservation Wardens, ANICOs have been regularly using the results in the narrative of their sensitization messages.

Support ANICOs in conflict mapping (in the cells with high threats bordering NNP)

The conflict mapping exercise is a useful tool to identify Cell-specific conflict issues and analyze root causes, impacts and possible solutions. ANICOs' involvement in this process is crucial, as they are best placed to capture the reality at the local, rural level.

ANICOs' conflict mapping was carried out in steps: first, a 'refresher training' on how to fill in the forms was carried out; then the ANICOs took the forms and compiled them over the course of 3-4 months; finally, the forms were reviewed and discussed together during the 'evaluation meeting'. The final outcome is summarized in the 'Nyungwe Conflict Mapping' report (Annex 3).

Output 3: Capacity to manage fire, and monitor mining and resource use impacts are in place

Facilitate outreach meetings between park managers, local authorities and law enforcement agencies on fire fighting and prevention

Fire prevention meetings were held in Nyamagabe and Rusizi Districts, as kick off for the fire prevention campaign, involving RDB park staff, District authorities, army, police and local communities. The main objectives of these meetings were to plan the fire prevention meetings at sector and cell levels, to identify prevention and mitigation measures during the dry season, and to identify the roles of the leadership at the sector and cell levels in case of fire. ANICOs' support towards the park's protection was particularly evident during this dry season, when ANICOs helped reporting on 7 fire occurrences and took initiative in mobilizing communities for fire-fighting. During this dry season at least 1,122 people (including RDB, security forces and communities) were involved in suppressing fires in Nyungwe.

Organize and facilitate trans-boundary quarterly coordinated patrol planning with Burundian counterparts

As planned, four quarterly coordinated patrols between Nyungwe and Kibira were planned and implemented (by the Institut National pour l'Environnement et la Conservation de la Nature (INECN) in Burundi and RDB in Rwanda). The patrols reported encountering and addressing various threats, including: mining (with signs of changing the course of Akaburantwa and Ruhwa rivers by miners), poaching (with over 150 snares removed), and bamboo and tree cutting, as well as agricultural cultivation (of yams and tomato fruits in the park totalling an area of 1035m²).

Provide support to user groups (bee-keepers, potters, bamboo harvesters, ex-poachers/livestock groups) around Nyungwe to facilitate linkages with relevant partners and government programmes / help organise the groups and register them as legal entities such as coops & associations

A process to assess the capacity and needs of ex-poachers groups in the sectors of Cyato and Rangiro was undertaken, in order to assist them with formalizing the status of registered cooperatives and supporting their linkage with the existing development schemes.

A conceptual approach of partnering with the local Saving & Credit Cooperative (SACCO) to provide credits to user groups was discussed with the concerned stakeholders (Cooperative members, RDB, SACCO and Sector's authorities of Rangiro and Cyato). Specifically, meetings were organized at the Sector level to understand the VUP credit program and to determine whether partnering with the SACCO could be a good strategy to secure long term sustainability (by generating a revolving fund in support of small revenue generating projects) of support to user groups. By the end of Y4, a draft MoU between the targeted Cooperative and SACCO was drafted and circulated for feedback. The process is continuing in Y5.

Improve ecological conditions in areas that have been affected by wild fires in the past through forest assisted regeneration

By the end of Y4, 6 ha of fire-degraded forest do not need further maintenance (fern removal) as the natural regeneration is in progress. For plots where the fern removal was initiated in the Y3 (3 ha) of this project, the process will be finalized in Y5. Additionally, 30 ha of degraded forest underwent fern-cutting treatment

implemented by a local cooperative from Banda (*Le Pilier de la Nature et de la Promotion du Tourisme - PNPT*), under technical supervision and training by WCS staff.

Output 4: Tourism impact monitoring program supports adaptive management of tourism program

Support and monitor implementation of LAC methodology

Early in Y4, WCS and RDB developed a work plan for monitoring impact of tourism on biodiversity (following the Limit of Acceptable Change (LAC) methodology). Data collection on tourists' satisfaction and guides' information started in April 2013. In May, the review of the data recorded during the first month (300 sheets) led to some recommendations on data-sheet review and data entry.

In October, a refresher training on LAC data collection was organized for RDB staff (and tourism interns). Following the training, data collection was completed and all data was entered (WCS will support RDB for analysis in Y5).

Reinforce chimpanzee tourism impact monitoring data collection and analysis

Joint site visits (WCS/RDB/JGI) were carried out at Gisovu and Mayebe, to assess basic needs and define a way forward to monitor progress (or lack of) in chimpanzee habituation. In fact, despite long attempts at chimpanzee habituation at both sites, there has been limited success. There are a number of different reasons behind this, including: larger home ranges, limited staff, limited supervision, limited motivation, equipment etc. Additionally, it is likely that having the 'easy' Cyamudongo chimpanzees for tourism (easy because they can only range on the 4km² forest) has not made Mayebe or Gisovu priority sites for investing (effort & resources), and these sites are also difficult to access. However, over the short-medium term, it is important for the park to reduce pressure on the Cyamudongo group by shifting the chimpanzee tourism back into the main forest block, where chimpanzees are less vulnerable to disease spread and also where habituated chimpanzees are less in regular contact with the human population.

Chimpanzee data collection forms were reviewed, in order to improve reporting and monitoring on the chimpanzee habituation process. 16 RDB staff attended a workshop on chimpanzee habituation data collection that also included training on monitoring the impact of tourism on biodiversity.

Strategy 3: Strengthening the knowledge and interest of the Government of Rwanda to develop and support PES policies

As mentioned previously, the implementation of this strategy, as planned in the Y4 workplan, experienced setbacks mostly due to REMA's different activity implementation timeline. While the PES task force meetings did not occur, REMA did go ahead and commission a study on developing guidelines for PES implementation in Rwanda. This follows the previous findings from the review of institutional, legal and policy frameworks for developing PES in Rwanda, which recommended developing a specific PES policy, to bring clarity of provisions from very many laws, regulations, orders and practices into a single platform of reference necessary in attracting and guiding investments into PES schemes.

Summary of targets and progress for Strategy 3 in Y4:

<i>Work-plan targets</i>	<i>Progress</i>
Report of Task Force / Working Group bi-annual meetings available	<i>Delayed/Not achieved.</i> No Task Force meeting: REMA's contact person resigned and no official replacement was appointed to lead on the Task

	Force.
Strategic objectives for PES development defined as part of on-going lobby to secure the approval of PES policy & law by the Government of Rwanda	<i>Delayed/Not achieved.</i> REMA has the responsibility of implementation; WCS stands ready to assist when objective development process starts.

Output 1: The Government of Rwanda has the knowledge and interest in establishing effective PES policies

Organize bi-annual PES taskforce/working group meetings

No task force meeting was held during this year. REMA, the leading agency, tried to call two meetings unsuccessfully due to other events organized on the same dates. Later REMA's contact person resigned and no official replacement was appointed to lead on the Task Force. This has made it difficult to organize any meeting.

Work with government to draft and lobby to secure the approval of PES policy and law for Rwanda

During the PES task force meeting held on December 6, 2012 (Y3), participants (REMA, PAB, RDB, RNRA, WCS and EWSA) discussed the institutional framework for PES development and how to move forward for its establishment in Rwanda. Participants agreed that it is imperative to have PES policy and law that will guide PES implementation which will be based on the review of legal, institutional and policy frameworks already completed and the policy outline proposed. REMA, the leading agency on PES, commissioned a study on developing guidelines for PES implementation in Rwanda. Though TORs for this study were not shared and discussed with PES task force members, WCS expects to be consulted and involved and stands ready to assist in the process of developing the PES guidelines and later the development of the policy.

Strategy 4: Develop (design and implement) a system of payments for ecosystem services

The main focus of this component is to design payment mechanisms for ecosystem services with an emphasis on watershed services and carbon offsetting. In partnership with ECOTRUST Uganda, a carbon management scheme for rural communities around NNP was designed and presented to stakeholders (Y3) and reviewed to submit the required project design documents to Plan Vivo. However, finalization of the project documents has taken longer than anticipated due to some communication issues with the implementing partner ECOTRUST. By the end of Y4, only the Project Idea Note (PIN) had been reviewed and approved by Plan Vivo, with the project's Technical Specification and PDD expected to be approved in the coming months.

The validation of WASSI-CB model results (initiated in Y3) was completed and the results presented to stakeholders during a symposium organized in Nyungwe. In addition, biophysical and economic assessments of Nyaruguru sub-catchment and the physical mapping of local beneficiaries of Nyungwe ecosystem services were carried out, with the results to be presented in Y5.

Summary of targets and progress for Strategy 4 in Y4:

<i>Work-plan targets</i>	<i>Progress</i>
1 PDD for small-holder tree planting as a land use strategy and carbon stock and 1 third-party validation report completed	<i>Partially achieved.</i> PIN reviewed and approved by Plan Vivo; Technical specifications reviewed by Plan Vivo and comments being addressed by ECOTRUST;

	Draft PDD received from ECOTRUST, is now under internal review before sending it to PLAN VIVO for review and approval.
Project registered in carbon registry	<i>Delayed.</i> Pending project implementation and validation.
Facilitator's manual available (adapted to Rwanda's context)	<i>Partially Achieved.</i> Facilitator's manual adapted to Rwanda's context, and will be tried during project implementation, if necessary revised to respond to local context and use by ADENYA.
*6 people (government staff & civil society) trained in PES design as part of building the capacity of local stakeholders (RDB, ADENYA, district) to manage the carbon scheme for farmers around Nyungwe	<i>Partially achieved.</i> Field training for 6 people in Bushenyi, Uganda, by ECOTRUST (March 2013) focusing on putting in place structures, procedures and processes for the management of a carbon project with rural communities. Second training delayed as the project documents are not finalized.
50 farmers recruited to join the carbon project	<i>Delayed.</i> Recruitment delayed, as the project documents are not finalized.
Locations and scale mapped (identification and measurement of operations, including plantations, factories, infrastructures, etc.) for five major private sector stakeholders	<i>Partially Achieved.</i> Data collection completed
Cost benefit analysis of land use change for 3 major businesses completed	<i>Partially Achieved.</i> Analysis of biophysical & socioeconomic data started, to be completed and presented in Q4
1 private sector forum facilitated and held with at least 10 different business institutions	<i>Delayed.</i> Postponed to April 2014 due to unavailability of stakeholders

Output 1: Payment mechanisms for ecosystem services established, with an emphasis on watershed services and forest-carbon.

Development of Project Design Documents for small-holder tree planting as a land use strategy and carbon stock

Project design documents required by Plan Vivo for small-holder tree planting are:

- Project Idea Note which defines the main elements of a proposed project and how it will contribute to sustainable livelihoods.
- Technical Specifications: A technical specification is a project-specific methodology that needs to be developed for each land-use activity in a single project. Technical specifications include appropriate management and monitoring systems, as well as risk management measures to be applied; also, analyses of project permanence and wider ecological impacts, particularly taking into account the effect of the activity on the soil conditions and water-table.
- Project Design Document (PDD) which gives detailed information on project governance and internal structures, and the way in which community-led design is achieved and capacity is transferred to producers; a structure for presenting technical information to reflect the multi-site and multi-activity nature of Plan Vivo projects; a structure for updating information as the Plan Vivo project develops, scales up and expands from pilot scale to regional scale, as more producers and communities are engaged. The purpose of the PDD is not only to evaluate the soundness of project design but also to ensure transparency of

procedures, to ensure institutional learning by documenting all improvements in procedures, and to avoid over-reliance on the knowledge of key staff members through maintaining an up-to-date set of procedures and explanatory notes.

By the end of Y4 the ‘Project Idea Note (PIN)’ of the ‘Nyungwe Community Carbon Scheme’ project has been approved by Plan Vivo (<http://www.planvivo.org/projects/registeredprojects/>).

The project’s Technical Specifications have been reviewed by Plan Vivo, and ECOTRUST is in process of addressing comments and will resubmit them to Plan Vivo for approval by mid-April 2014.

A draft of the PDD was submitted to WCS and shared with RDB for comments before it is revised and submitted to Plan Vivo for approval. The PDD will have to take into consideration the Technical Specifications review feedback as it was drafted before Plan Vivo provided its comments. The reviews of the Technical Specifications and PDD by Plan Vivo are to ensure the credibility of all assumptions used and calculations made and to ensure that procedures and systems described conform to the Plan Vivo Standards and guiding principles, in particular demonstrating an effective and transparent governance structure.

Project implementation and validation: farmer recruitment, 3rd party validation and project registration.

The implementation of the carbon project for the small-scale landholding farmers around Nyungwe has been delayed due to the slow process of documents preparation overseen by ECOTRUST and time taken by Plan Vivo to review the Technical Specifications. Farmer recruitment was put on hold until project documents are finalised so that implementation can be based on informed decisions and realistic expectations about returns for the community.

In Plan Vivo projects, unlike other carbon projects, the validation process is often initiated as projects are already being implemented. This system was established as young projects often do not have the financial capacity to pay for the verification process at the time of inception. The validator conducts a visit to validate that the claims made in the PDD and Technical Specifications are being met on the ground. If there are any lapses, the validator may identify major Corrective Action Requests (CARs), which will have to be addressed by the project before it can be registered. Once the CARs, if any, are addressed and resolved, the validation report will be approved by the Plan Vivo Foundation, and an MoU will be signed between the project coordinator and the Foundation, at which point the project will be registered.

Finalise the facilitator's manual (adapted to the Rwandan context)

The draft of a facilitator’s manual developed in Y3 was discussed during the field training in Bushenyi in Y4 and adapted to Rwanda’s context. As it has some components of the Technical Specifications, it will be revised according to the Plan Vivo Technical Specification review feedback and translated into Kinyarwanda before it is tried in Nyaruguru. If needed during implementation it could be adjusted to fit field context for better use by ADENYA.

Build capacity of local stakeholders (RDB, ADENYA, District) to manage the carbon scheme for farmers around Nyungwe

From the 12th to 15th March 2013, a field training in Bushenyi, Uganda, was organized by ECOTRUST in collaboration with WCS and RDB for 3 staff of ADENYA, 1 NNP community conservation Warden, the Nyaruguru District Environment Officer and 1 WCS staff. Bushenyi was chosen as the capacity building training venue mainly because it is one of ECOTRUST’s old sites where Trees for Global Benefits Programme is currently being implemented. Thus, the training site was surrounded by real world examples of the capacity building process, which provided an excellent example for participants.

The training focused on putting in place structures, procedures and processes for the management of a carbon project with rural communities. Participants were taken through the following training content:

- The Plan Vivo Cycle, what it is and how it works
- Farmer mobilization and recruitment strategies
- Mode of operation microfinance institutions in the Plan Vivo project: visit to institutions like SACCOs and CBOs
- Documentation and Monitoring: its importance in performance-based payments
- Practical session on review of farmers' application forms / expression of interest in Plan Vivo's projects

The training involved two sessions: an indoor training workshop and field / practical sessions training, where facilitators from ECOTRUST and CBOs implementing a similar scheme in Bushenyi District shared experiences.

During the indoor capacity building training, participants were facilitated in a step by step discussion of the facilitator's manual to help them understand how the manual is applied. During this exercise, participants proposed changes pertaining to Rwanda's context.

During the field based / practical sessions, participants were taken through the various aspects of managing the carbon project. In these field sessions, participants interacted with the farmers, as well as the farmer coordinators in Bushenyi. They attended real life sessions involving training and recruiting farmers, as well as monitoring use of a facilitator's manual.

The second training is delayed as it was planned to take place during farmer recruitment.

Carry out physical mapping of location & scale (identification and measurement of operations, including plantations, factories, infrastructures, etc.) for private sector stakeholders around NNP

Data collection on physical mapping of location and scale of major water users around Nyungwe National Park was completed and included users' perception of ecosystem services and their willingness to make investments in supporting Nyungwe National Park conservation. The exercise targeted tea, rice, cement factories, plantations and hotels/lodges. The exercise was done in order to understand how businesses' location in the landscape relates to their use and perception of ecosystem services and to their potential motivations to make investments. A stakeholders' workshop is planned in Y5.

Carry out cost / benefit analysis of land use change for major beneficiaries

Information for the analysis of biophysical & socioeconomic data of Nyaruguru sub-catchment was collected in Y4, but the analysis and reporting were slightly delayed, thus delaying also the cost benefit analysis of land use change for major businesses. These are expected to be finalized by June 2014.

The validation of the WASSI-CB model results (initiated in Y3) was completed and results were presented during the WCS 25th anniversary symposium.

Facilitate and support private sector forum meetings on PES around NNP

Given that data analysis of biophysical and economic assessments of Nyaruguru Sub-catchment and cost benefit analysis of land use change were delayed, the private sector forum meeting to present results, help address gaps in awareness and understanding, and catalyze progress towards a large-scale sustainable financing mechanism was postponed to Y5.

Strategy 5: Develop Sustainable Alternatives for Resource Use

Deforestation based on the demand of fuel wood for the population surrounding NNP continues to pose a threat to the park. While tree planting and woodlots address the supply side, WCS recognizes the importance of

addressing the demand side as well. In Y3, WCS worked in partnership with Rural Environment and Development Organisation (REDO) to pilot-promote energy efficiency stoves (EES) in the communities of Bweye and Nkungu (Rusizi district).

In Y4, a feasibility study was carried out (by a consultant, under the supervision of sub-grantee REDO) to assess the technical feasibility, environmental compliance and economic feasibility of producing EES in Nkungu by building a kiln in the area (managed by the local cooperative of potters KOACYA). A market assessment for EES in the area was also carried out, as well as the assessment of the management capacities of the cooperative members.

Around Nyungwe there are many opportunities for, and stakeholders interested in, bamboo development. In order to support the Nyaruguru District in coordinating efforts, WCS, in close collaboration with District authorities, led the process of mapping all areas identified as potential sites for bamboo development. This mapping exercise is expected to be used as reference for future bamboo development projects in Nyaruguru District.

Additionally, WCS has joined efforts with RDB in providing financial and technical support to the Revenue Sharing funded project (implemented by the local cooperative IMBERE HEZA in the Nyaruguru District) to establish a bamboo nursery. Specifically, a comprehensive training for the cooperative's members was organized (with a trainer from RAB) to provide knowledge on bamboo propagation techniques, techniques for bamboo nursery establishment, bamboo cultivation; and pest management and control, among other topics.

This project is expected to result in an increase in local availability of seedlings which could then be easily acquired by local farmers, thus reducing the pressure on the park.

Summary of targets and progress for Strategy 5 in Y4:

<i>Work-plan targets</i>	<i>Progress</i>
Feasibility study and environmental assessment reports available and circulated for kiln construction in Nkungu, Rusizi to enable the low cost production of Energy Efficient Stoves	<i>Achieved.</i> Consultant provided feasibility report (end of Y4), in finalization process by incorporating comments from stakeholders.
Areas suitable for bamboo development are mapped and roles and responsibilities of different stakeholders clarified as part of supporting coordination of bamboo initiatives in Nyaruguru district	<i>Partially Achieved.</i> Mapping carried out, validation workshop planned for Y5 Q1.
200 individuals reached (community members receiving seedlings and cooperative members)	<i>Delayed:</i> Training of cooperative members carried out but seedlings not yet ready for distribution

Output 1: Improved energy efficiency in villages around Nyungwe from introduction of fuel efficient stoves and alternative fuel sources

Assess feasibility and environmental impact of EES kiln construction

The process of information gathering for the feasibility analysis of the kiln construction to produce Energy Efficient Stove (ESS) in the Nkungu sector was led by sub-grantee REDO, with WCS technical assistance. During previous meetings with the KOACYA Cooperative of Nkungu and Sector authorities, the potential site for the kiln was identified, as well as the site for extracting the clay.

EWSA technicians were invited to assess the quality of clay using specific tests (Coiling and Suitability tests) and found it suitable. REDO carried out a rapid assessment of the local market potential and the willingness to buy the EES, by making 50 EES available for sale at the site. The rapid rate of acquisition among the local population provided an indication of the potential market in the area.

A technical consultant was hired to produce a feasibility study (including an EIA) for the kiln construction. A draft feasibility report was presented by the end of Y4. Comments are being incorporated from various stakeholders, and a final report will be submitted with the Y5Q1 report.

Output 2 Creating incentives for reducing illegal bamboo harvesting

Support coordination of bamboo initiatives in Nyaruguru district (initiate the collaboration, sharing of information and the identification of opportunities) to increase support to the area most sensitive to bamboo development (due to the illegal exploitation of bamboo in the park)

WCS, in close collaboration with District authorities, led the process of mapping all areas identified as potential sites for bamboo development. The mapping has been completed by the end of Y4, with the validation workshop planned for the first quarter of Y5.

Support to local community to develop bamboo nurseries

Last year, the local Cooperative IMBERE HEZA, based in Busanze Sector, Nyaruguru district, was awarded funds from the Revenue Sharing Program to set up a bamboo nursery to promote bamboo growth and production in the area, providing needed raw material for income generation and livelihood enhancement, while sustaining the protection and conservation of the bamboo habitat within the NNP. During Y4, WCS has been following the implementation phase, with RDB CCW, supporting the cooperative in receiving the needed training, provided by a Professional Bamboo Expert and Trainer from the Rwanda Agricultural Board (RAB). The training transferred bamboo development knowledge, and covered various topics such as (1) the importance of bamboo in environment conservation and people's livelihood; (2) the different bamboo propagation techniques; (3) the techniques for bamboo nursery establishment, bamboo cultivation; and (4) bamboo pest management and control.



Training in bamboo propagation techniques and nursery establishment, in Nyaruguru District.

Strategy 6: Implement Education and Outreach Program

In Y4, the education and outreach program focused on the implementation of the education and outreach strategy, the use of the materials produced and the implementation of the activities by the local educators (teachers and ANICOs). RDB and WCS played mostly a supportive and monitoring role, visiting the 20 pilot schools regularly and providing technical support to the educators (teachers and ANICOs).

In addition to the formal education programs, we implemented two large 'social marketing' events to mobilize large crowds through entertainment, as a complementary tool to the smaller, more focused 'local forums', led by the ANICOs. We also worked closely with Media Impact to develop the serial radio program, "Ahajishe Igisabo."

Summary of targets and progress for Strategy 6 this year:

Work-plan targets	Progress
Monitor the use of Conservation Education (CE) material : 200 students (20 students x 10 schools) participating in the program with USG assistance (using the CE materials)	<i>Achieved.</i> CE material available and in use effectively in schools, including 10 additional schools
500 copies of book; 500 thematic school materials prioritized and developed as additional CE materials identified in the Outreach Strategy for using in schools	<i>Partially achieved.</i> Booklet text finalized after review from teachers and collaborators; illustrations received by US artists; layout to be finalized
3 new outreach materials designed and produced for use in outreach program	<i>Achieved.</i> 5 thematic (and 1 general) posters produced
*5,000 people reached through social marketing events (as defined in the strategy)	<i>Achieved.</i> 2 Social marketing events organized, overall estimated attendance 4500 people. Additional significant outreach achieved with the radio program ‘Ahajise igisabo’

Output 1: Students in formal education (primary and secondary) will adopt a positive/supportive attitude to park conservation efforts based on a clear understanding of the multiple values of NNP, reduce the adoption of unsustainable behaviors as they grow into adults, and act as advocates for the value of the Park and its conservation.

Monitor use of developed CE materials

Early in the year, teachers from 20 schools around Nyungwe National Park received the new materials produced in Y3 (posters and game), were trained on their use and received a ‘refresher’ training on general Nyungwe conservation themes (Nyungwe services, biodiversity, threats and RBM).

In the following months, monitoring of the implementation of the education strategy and the use of produced education material was done by the regular WCS visits to the targeted 20 schools. During the visits, WCS assessed the regular use of the materials, addressed questions emerging from their use, and observed their overall integration into planned and new activities. These activities included drama, comedies and songs developed by the environmental clubs; gardening; garbage collection; forestry initiatives; organization of a visit to Nyungwe Park (schools of Nyanza, Banda, Cyamudongo); organization of community meetings; and the transmission of conservation messages such as fire fighting information (school of Gasanane). The teachers involved in the USAID-funded education program presented some achievements in their sectors, including: supporting neighbouring schools in forming environmental clubs, training teachers in environmental education, creating small livestock programs to generate small funds for the clubs activities, and participating in outreach campaigns within their sectors.

Prioritise and develop additional CE materials identified in the Outreach Strategy for using in schools

The prioritized CE material developed this year was a booklet on Nyungwe, targeting school children in grades from P4 to S6 (ages 10-19). The booklet concept and text were developed as a joint effort between the WCS education team, US interns and volunteers, Gisakura teachers and RDB CCWs, while 6 US artists produced drawings for its illustrations. There were some delays due mostly to the limited production budget and the involvement of a large number of people. By the end of this reporting period, the text and drawings have been finalized and the booklet (text) was tested among students for feedback. For Y5, the layout and printing will be finalized.

Output 2: Vulnerable groups (community members responsible for threat behaviours in NNP) adopt a supportive attitude to the park and change their behavior based on understanding of the multiple values of NNP

Design, create, pilot and adapt conservation materials and activities for use in outreach programme

Most of the materials used in the community outreach activities are the posters produced in Y3. Additionally, new thematic posters were produced to showcase the conservation activities in Nyungwe, including: Research and Monitoring, Education and Outreach, Beekeeping, Forest Regeneration, Watershed Modelling and a general poster on WCS activities. These posters were exhibited at a symposium organized in Nyungwe, celebrating 25 years of WCS conservation efforts in Nyungwe, which also coincided with the start of USAID support to biodiversity conservation and the promotion ecotourism in this important forest.

Implement and monitor conservation education and outreach programs for communities near NNP and carry out social marketing events (as defined in the strategy)

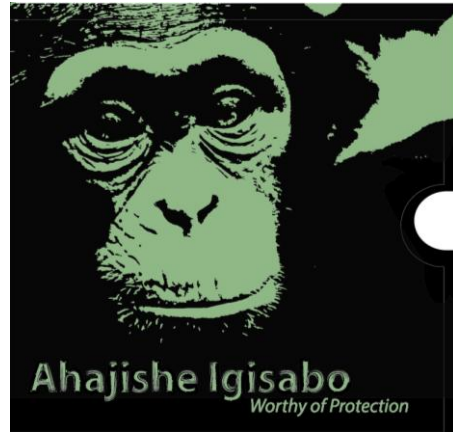
Two main social marketing events were organized during this year, reaching together an estimated 4500 people. The first was carried out during the two-day celebration of 25 years of partnership for the conservation of Nyungwe, organized by RDB and its partners on World Tourism Day, September 27th. WCS/USAID led the Symposium on achievements made in the Park over the last 25 years (see Appendix III for a report from Bill Weber) at the Nyungwe Forest Lodge and the Community Event at the Gisakura school ground where conservation themes were addressed through drama, poems, songs and speeches, attracting distinguished guests and receiving high community participation (with an estimated attendance of 2500 people).

Following the recommendation of the Kitabi local forum organized by ANICOs, a community sensitisation event was held on 27th of February 2014 at Muyange Primary School in the Cell of Shaba, Kitabi Sector, with approximately 2000 attendees. The messages at the event, delivered by renowned comedian Kanyombya, focused on encouraging and rewarding anti-poaching behaviour, and included a performance of the school's environmental club.

This year, WCS piloted the use of community radio for delivering conservation messages, by partnering with Media Impact (MI), with the support of USAID. WCS and MI worked closely with drama writer and producer, Charles Lwanga Rukundo, in creating “Ahajishe Igisabo,” a radio serial drama that weaves together relevant information on chimpanzees with a compelling and entertaining story. The radio program was launched in July, broadcasting the drama in 20 15-minute episodes. Each episode was followed by 45 minutes of radio magazine, where invited guests (RDB, WCS, ANICOs, community members and local authorities) spoke on the theme of the day pertaining to the conservation of Nyungwe Park, followed by a radio quiz. The program was broadcast live once a week and repeated each Saturday over 5 months. Overall, the feedback received was highly positive and the program was very popular, as evidenced by the high number of incoming calls during the broadcast, coming from all around Nyungwe and as far as Gakenke district, in the Northern Province.



Nyungwe Symposium and social marketing event to celebrate 25 years of conservation partnership



WCS staff at Radio Rusizi, broadcasting “Ahajishe Igisabo.” Radio program CD cover.

C) DISCUSSION OF PROJECT RESULTS

As requested by USAID/Rwanda, ECODIT LLC compiled a detailed report assessing the results and achievements on this project (and the suite of USAID/Rwanda biodiversity programs in NNP since 2006).


Overall, it was found that the project is performing well and advancing its conservation objectives. *“WCS has made great strides in improving park management’s ability to identify, monitor, and address threats to the Park (including handover of the RBM system to RDB and development of a fire management plan); revamped the Animateurs de Conservation (ANICO) program; led a successful pilot to get 200 households around NNP to adopt fuel-efficient stoves; established and is technically advising the national task force on Payments for Ecosystem Services (PES); and has developed a sound and well thought out education strategy. Despite these achievements, progress on making any PES scheme operational has been slow, and implementation of the education strategy delayed.”* For more information see: Cowles, P; Hoffman, C. A.; Hakizimana, E.; Zerbock, O.; McClintock, E.; Bamwesigye, J. (2003). “Evaluation of USAID Investments in Nyungwe National Park.” ECODIT Prepared for USAID/Rwanda under Prosperity, Livelihoods and Conserving Ecosystems (PLACE) Indefinite Quantity Contract number EPP-I-00-06-00010-00, Task Order # AID-696-TO-13-00002.

Some of the challenges and delays identified in Y3 have persisted, for various reasons which are discussed individually:

- **Fire Management Plan implementation:** In Y4, WCS invested considerable effort trying to secure the funding support for the implementation of the Fire Management Plan, but unfortunately we were not successful. (More on this in section G.) Collaboration with the New Forests Company (NFC), in charge of the buffer zone management, and RDB is ongoing, in order to coordinate efforts during (and before) the dry season.
- **High pressure of illegal activities, particularly of poaching and mining:** Illegal activities are still on the rise and pose a serious threat to the future of NNP. This seems to be largely due to the persisting effect of the two major causes identified last year: the first is the lack of a wildlife law (still in the process of being approved but may take more time) providing a clear framework for carrying out prosecutions against wildlife related crimes; the second is the lack of alternative livelihood options such as off farm income generating activities for the local population, which is particularly dense and poor around Nyungwe.


D) SUCCESS STORIES

Three success stories were submitted in the course of this year's reporting, focusing on Nyungwe's community liaison agents (ANICOs), Ranger-Based Monitoring in Nyungwe National Park, and involving communities in threat detection.




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Nyungwe Community Liaison Agents: the ANICOs



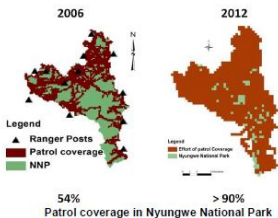
ANICO NGENGIEZE Sylvester, talking to the authorities and the communities of Bweveve.

ANICOs (Ansiwacu de Conservacion) are individuals selected from the communities surrounding the park who play the role of liaison intermediary between the park and their community. The role of ANICOs is to help reduce threats to the park and conflicts with surrounding communities. At the same time, ANICOs play a crucial role in increasing communities' understanding of, and access to, the benefits generated by the park. During this past quarter, ANICOs have conducted sensitization meetings in collaboration with local authorities, park wardens and WCS staff, reaching over 6000 people in preparation of the coming dry season. ANICOs have engaged in fire prevention sensitization in different areas around the park starting early in May. Over 200 information cards and reports were made to the park authorities concerning illegal use of natural resources made NNP. On one occasion, the information provided by an ANICO contributed to the arrest of the second man involved in attacking a park ranger last year.



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Ranger Based Monitoring in Nyungwe National Park



2006 2012


Legend
▲ Ranger Posts
■ Patrol coverage
■ NNP

54% 2006
> 90% 2012

Patrol coverage in Nyungwe National Park

Initiated by WCS in 2003, Ranger Based Monitoring (RBM) has been recognized as a key tool to identify areas of threat, plan law enforcement activities and monitor effectiveness of park management strategies to protect NNP. In 2006, the annual patrol coverage was about 54% of the park. With the 'Sustaining Biodiversity Conservation in and around Nyungwe' project, USAID has supported the implementation of a 24-month handover plan to RBM, consisting in providing training, equipment and monitoring its effective use. As a result, patrol planning became more efficient and targeted, as it was based on RBM results through adaptive management: while the rate of patrols based on RBM results has increased to 60%, the annual patrol coverage increased to more than 90% of the park. The handover process was finalized in July 2013.


1 Associate Cooperative Agreement No AID-696-LA-10-00001 – WCS quarterly report for Year 4, Quarter 1



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Involving Communities in Threat Detection

Over the years, several ex-poachers associations have been created around Nyungwe, joining efforts to implement revenue-generating activities which don't depend on illegal resource extractions from the forest. Many of them are involved in awareness raising efforts and regularly participate in meetings with RDB, WCS and ANICOs (Community Liaison Agents), focusing on how to reduce the threats to the park. During a recent meeting between ANICOs, RDB Community Conservation Wardens and local authorities, the issue of continued poaching and the decrease in wildlife in the park was raised. Recognizing the support many cooperatives have received by (or through) the park, ex-poachers members expressed their interest in assisting the rangers in identifying the threats, thus providing a practical support to the Ranger-Based Monitoring (RBM) guided patrols. The results from the first ex-poachers' threat monitoring exercise proved encouraging: while rangers used the knowledge gained from previous patrols (through RBM) to identify the target area, the ex-poachers used their forest knowledge to easily locate snares, deadly devices targeting small to medium mammals (which can also catch chimpanzees' limbs, causing the loss of a hand, foot or death by gnawing).



With the skills and knowledge of ex-poachers, 82 snares were located and removed from the forest and 4 poachers' camps were demolished.

1 Associate Cooperative Agreement No AID-696-LA-10-00001 – WCS quarterly report for Year 4, Quarter 3

E) COMPLEMENTARITY WITH OTHER DEVELOPMENT PROGRAMS

In the course of the last year, activities funded through the implementation of this cooperative agreement have complemented other approaches being implemented by WCS and other partners in Nyungwe in the following ways:

- The transboundary collaboration between Kibira and Nyungwe National Park was started in 2006 and has been growing year by year. With funds from the **MacArthur Foundation and US Fish and Wildlife Service** a variety of activities have been completed this year (with others ongoing), including: purchase of additional field equipment to support park protection, training of rangers in Ranger-Based Monitoring techniques, training of INECN staff in wildlife management at KCCM, and support for the habituation of a group of chimpanzee for tourism development at Kibira. In order to mitigate threats (mostly mining, poaching and bamboo cutting) along the border of Nyungwe and Kibira NPs, quarterly support to coordinated patrols was also provided with these funds (while the joint planning between INECN, WCS and RDB was supported by USAID).
- The collaboration between WCS and **Partners in Conservation** (PIC) has benefitted from the additional support of a **VSO** business development advisor who has worked closely with the Beekeepers Union during most of Y4. Through a participatory process, led by a former VSO volunteer to WCS, the Union developed its first business plan. This will be a key tool in guiding the Union towards the sustainability of its business operations.
- WCS is a member of **Tropical Ecology Assessment and Monitoring (TEAM) Network**. The objectives of the TEAM Network are to quantify and forecast changes in biodiversity in tropical forests at local, regional and global scales, and to understand the intrinsic dynamics of biodiversity and its responses to anthropogenic drivers of change (e.g., climate change, habitat conversion, habitat degradation, overexploitation of species). With support from **MacArthur Foundation** and in collaboration with **Conservation International** (CI) and REMA, WCS aims to quantify the impacts of agricultural development on ecosystem services and the subsequent effects on human well-being near NNP. Data is being collected using the most current versions of the TEAM Protocols and all the data will be freely available through the TEAM data portal. The project is also intended to serve as a pilot for assessing the potential of Rwanda for future participation in an Africa-wide network of sites committed to monitoring of ecosystem services.
- WCS education and outreach programme collaborated with **USFWS** and **Media Impact** (MI) in the development of outreach and education materials, training, and awareness activities (such as community events and chimpanzee tracking) for students, teachers and ANICOs. Additionally the radio program broadcasted in Y4, “Ahajize Igisabo”, was mostly funded by USFWS and technically led by MI.
- Finally, WCS worked closely with the USAID-supported “Nyungwe Nziza” project, implemented by **Development Alternatives Incorporation** (DAI), aimed at strengthening the sustainable ecotourism in and around Nyungwe National Park. WCS and DAI jointly planned chimpanzee habituation and tourism impact monitoring activities, using the LAC method (Limits of Acceptable Changes).

F) TRAINING

In Y4, a number of training activities were organised for government institutions (especially RDB) and local communities. The following is a table providing details of these trainings and the number of participants:

Date	Title	Objectives	Participants	Tot part.	Female	Male	Youth
Q1 (2 training sessions of 5 days each)	GIS training	Training in GIS to back up previously received RBM-MIST training in order to increase the mapping skills	RDB Park's staff	18	0	18	0
25-27 May 2013	ANICO Refresher training	Update ANICOs (particularly 14 new ANICOs) on conservation related topics including: conservation issues in NNP and ANICOs' related roles;; review of conflict resolution techniques, laws and regulations governing conservation and management of the park (including compensation law); application of Ranger-Based Monitoring results in ANICO work; involvement of ANICOs in fire prevention around the park; and the development of Revenue Sharing project applications	ANICOs	52	7	45	0
Q2 (mid-July)	RBM Training of trainers	Refresher training as part of 24 month transition plan and for testing the developed training manual	RDB Park's staff	15	0	15	0
12-15 March 2013	Training on carbon sequestration schemes involving rural communities	Building the capacity of local stakeholders to manage the carbon scheme for farmers around Nyungwe	Government staff & civil society (RDB, ADENYA, District)	6	1	5	0
13-14 November 2014	Refresher training in MIST GIS	A refresher training in various aspects of MIST GIS	RDB staff (Head zones, monitoring agents, especially the newly appointed staff)	16	0	16	0
22-23 Jan 2014	Refresher training on LAC	A refresher training on Limit of Acceptable Change (LAC) for tourism monitoring in preparation of data collection	RDB staff (and tourism interns)	16	4	12	5
22-23 Jan 2014	Chimpanzee data collection training	A refresher training to strengthen chimpanzee tourism impact monitoring data collection and analysis	RDB staff	16	0	16	0
7-10 January 2014	Exchange / study visit of ANICOs to PNV	The study visit aims at getting factual experience re the ANICO organization and management in PNV, particularly how they implement conservation related commitments within PNV and also the kinds of income generating activities they are involved in.	ANICOs	8	0	8	0

17-19 Feb 2014	Training on bamboo growing techniques	The training aimed at providing the trainers with basic and professional skills in bamboo growing that will enable them to confidently carry out the bamboo growing operations and avoid the failures of the past.	Members of Cooperative IMBERE HEZA, based in Busanze Sector, Nyaruguru district	45	30	15	5
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G) CROSS-CUTTING ISSUES

- **Environmental Compliance**

The project activities implemented during the Y4 of the project did not have any direct impact on the environment per se. On the contrary, they were aimed at strengthening the capacity to reduce the threats / negative impacts on park biodiversity and to design actions for counteracting those threats and reversing the trends.

An Environmental Review Form was completed as part of the feasibility analysis of constructing a kiln to produce EES in Nkungo Sector. The construction is not planned in this project phase, but the information provided in the feasibility analysis will help guide possible future activities to promote EES around NNP.

- **Gender**

As has previously been outlined, the lack of a gender or other disadvantaged groups analysis at the onset of the program has limited the capacity to specifically address the integration of gender while planning the project activities. During the performance evaluation of the USAID/Rwanda biodiversity program in Nyungwe (see next section on sustainability for more details), the evaluation team recommended carrying out a rapid gender and other disadvantaged groups analysis to ensure that project activities take into account the realities for disadvantaged groups living around the Park. The gender analysis was conducted between February 18-28, 2014, by Natalie Elwell (USAID/E3/GenDev), Triphine Munganyinka, and Patrice Hakizimana (USAID/Rwanda/Program Office and Economic Growth/Agriculture Office, respectively). The main theme discussed during meetings, workshops and interviews was ‘Broadening community participation in the conservation of Nyungwe National Park’. This analysis provided insights to WCS and USAID as to gender and other disadvantaged groups issues within conservation programming, and the team identified recommendations for addressing them (Appendix IV). Additionally, project and RDB staff were trained in carrying out such analyses, which may be used in conjunction with future project design.

- **Sustainability aspects**

Early in Y4, USAID/Rwanda engaged the services of ECODIT LLC to conduct a performance evaluation (Feb–Apr 2013) and assess the results and achievements of the suite of USAID/Rwanda biodiversity programs in NNP since 2006. The ECODIT Evaluation Team also investigated the extent to which USAID investments are likely to be sustained after the current two projects close in 2015. Extracts of the findings and recommendations on the sustainability of this project are reported below, under Phase 3 (*in parenthesis the progress on the recommendations is summarized in italic*), for the full report see Cowels et al. 2003.

During the Remaining Implementation Period

WCS should prioritize making the fire-management plan operational, as fire is such a serious threat to the Park and buffer zone (*a concerted effort was made during Y4 to secure funding for this through FONERWA, unfortunately this was not successful; RDB, WCS and NFC will join efforts before and during the next dry season-as done in Y4*). Additional recommendations for WCS include:

- looking for opportunities to hand off further conservation activities to RDB, for example the environmental education component (*while this is not feasible at this stage, WCS is developing a concept for scaling up Education and Outreach activities which includes the development of manuals for educators, with the objective of handing over the activities to RDB, the school environmental clubs and the ANICOs*);
- looking for practical ways to scale up the wood stoves initiative such as a pilot stove sale (*see Strategy 5 and Annex X for the results of the feasibility analysis of producing and selling EES locally*);
- and investigating other practical approaches for a national level PES pilot, such as a national water tax that could apply to utilities, bottled water companies, and/or industries that depend on clean water (*WCS is initiating a project –funded by the Mac Arthur Foundation – on the integration of natural capital into the country’s economic development plan, following Rwanda’s signing of the Gaborone Declaration*).
- The Evaluation Team also encouraged WCS to carry out a rapid gender/other disadvantaged groups’ analysis (*implemented in Y4*).

Phase 3 – Sustainability Phase

USAID is the most significant donor involved in Nyungwe (currently contributing more than half of WCS’s operating budget in Nyungwe), and we feel ending funding at the conclusion of the current projects would threaten the long-term sustainability of USAID’s investment in biodiversity programs in the area. A third phase of funding could help secure the sustainability of key activities through direct assistance to RDB, Kitabi college, and/or other local actors; by facilitating in the hand-off of activities once RDB has achieved the capacity and financial ability to absorb them into its park management functions (e.g. Environmental Education [EE]); assisting a new NNP management authority; or supporting a combination of government institutions and WCS. The following are some illustrative activities for an NNP **Sustainability Phase**:

- Strengthen capacity of RDB headquarters to internalize and manage conservation activities within NNP
- Build capacity of NNP staff (or other local entity) to deliver an EE program
- Fully develop PES/CSR mechanisms to enhance long-term sustainable finance (National Fund for Environment and Climate Change or other such mechanism)
- Support RDB to internalize a long-term, targeted NNP staff-training program
- Improve roads to Banda and Gisovu to open these areas to more tourists
- Help RDB to more effectively coordinate work in the buffer zone overall
- Continued support for annual business planning and marketing operations

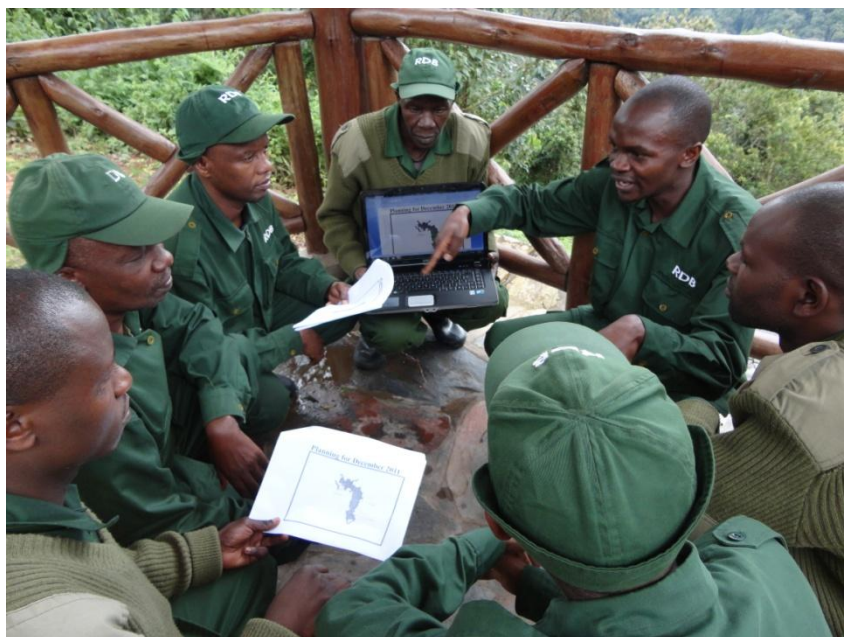
Opportunities for an Expansion of USAID Investment in Nyungwe

In addition to the above sustainability activities, USAID could significantly scale up livelihood improvements around the Park--not just for a few hundred people, but for tens or even hundreds of thousands of people. The key to this expansion of investment would be to tackle the issue of agricultural development and livelihood diversification of communities around the Park. USAID is already working in the Agricultural sector with RDB in other areas of the country.

We believe USAID should investigate how a portion of its agricultural investments might be used around NNP as a means to improve the livelihoods of people living around the Park.

This section was excerpted from: Cowles, P; Hoffman, C. A.; Hakizimana, E.; Zerbock, O.; McClintock, E.; Bamwesigye, J. (2003). “Evaluation of USAID Investments in Nyungwe National Park.” ECODIT Prepared for USAID/Rwanda under Prosperity, Livelihoods and Conserving Ecosystems (PLACE) Indefinite Quantity Contract number EPP-I-00-06-00010-00, Task Order # AID-696-TO-13-00002.

NYUNGWE NATIONAL PARK



RANGER-BASED MONITORING

2011-2013 TRANSITIONAL WORK PLAN – EVALUATION REPORT

PREPARED BY FELIX MILINDAHABI, WCS RWANDA RESEARCH AND MONITORING MANAGER
DECEMBER 2013



ACKNOWLEDGEMENTS

This work was sponsored by USAID under the project 'Sustaining biodiversity conservation in and around Nyungwe National Park, Rwanda'.

ABBREVIATIONS AND ACRONYMS

RBM: Ranger-Based monitoring

RDB: Rwanda Development Board

USAID: United State Agency for International Development

WCS: Wildlife Conservation Society

MIST: Management Information System and Technology

GIS: Geographic Information System

HQ: Headquarter

NNP: Nyungwe National Park

PNV: Volcanoes National Park

ORTPN: Office *Rwandais du Tourisme et des Parcs Nationaux*

1 INTRODUCTION

Nyungwe National Park is situated in the hills of southwestern Rwanda between a latitude of 2°15' and 2°55'South and longitude 29°00' and 29°30'East and at an altitude of between 1,600 m and 2,950 m (Plumptre et al. 2002). Together with the contiguous Kibira National Park (Burundi), it forms one of the largest montane forests in Africa. The Nyungwe ecosystem is part of the Albertine Rift Afromontane forests and constitutes an important habitat of very high biodiversity value in terms of endemic and range-restricted species. The Nyungwe National Park shelters a number of IUCN categorized rare, vulnerable and endangered species such as Eastern chimpanzee (*Pan troglodytes schweinfurthii*), Owl-faced monkey, L'hoest's monkey, Grauer's Rush Warbler in Nyungwe National Park (NNP). As researchers continue to explore the Park and its biodiversity, new evidence of its high biological importance emerge. Recently, an African glass frog, a new *Hyperolius* species (Anura: Hyperoliidae) was recorded and it is believed to be endemic from Nyungwe National Park (J. DEHLING, 2012), and many orchid species were documented as endemics of Rwanda and Nyungwe in particular. Colin Groves and Peter Grubb have just published a new book in which they review Ungulate taxonomy (Groves & Grubb, 2011). In it they have identified many new species of which several are in the Albertine Rift region and will become of conservation concern if this taxonomy is accepted. Lestrade's duiker (*Cephalophus lestradei*), a red duiker confined to the forests of Nyungwe-Kibira in Rwanda-Burundi, was identified in this book.

Threats to the biodiversity of Nyungwe are, in most cases, the results of human activities driven by dependency on park resources by communities surrounding the park (Masozera, 2002). Communities around Nyungwe National Park are primarily subsistence agriculturists (Gapusi, 2007; Plumptre, 2004; Masozera, 2002). The human population density around NNP is among the highest in Rwanda with a range of 250 to 500 people/km² (Gapusi, 2007). A high percentage of the people living near NNP live in poverty characterized mainly by lower education levels, large families, poor housing, limited access to basic infrastructure, shortage of land and limited food production (Plumptre et al., 2004). Consequently, these communities rely on park resources to supplement their livelihoods. Poaching, illegal mining, trees and bamboo cutting are major threats to the park and continuously recorded. Wild honey gathering, smoking bush meat and encroachment are underlying factors causing fires in the park. In addition to massive destructive fires in 1997-98, about 30 to 50 hectares are burned every year as results of human activities.

The impact of human activities on the NNP resources takes the form of depression of animal and plant populations, local disappearance of species, habitat degradation and damage to plant species. In Nyungwe, poaching has led to the local extinction of large animals such as the African Buffalo (*Syncerus caffer*) and African Elephant (*Loxodonta africana*), has significantly reduced the population of duiker species, and has indirectly affected carnivorous species. Crop raiding by animals (in most cases primate species) is the major source of human wildlife conflict in Nyungwe National Park.

Nearly 13,000ha (about 12% of the park) was lost to wildfires during the 5 year period from 1997 to 2003. These fires completely removed above-ground vegetation and led to the invasion of ground ferns (*Pteridium* sp.).

In its mandate to protect biodiversity in national parks of Rwanda, RDB (formally ORTPN) has been increasingly investing in park protection (increased number of rangers, construction of ranger posts, providing equipment for park protection, data collection, and providing various training to build capacity of park staff in park protection) since 2003. Prior to this time, ORTPN had only few park rangers and most park protection activities were supported by WCS. Since 2003, data have been collected to monitor trends in abundance of threats to biodiversity and key animal species in Nyungwe National Park. This information is key for developing and planning for effective strategy and management actions for the park.

1.1 SCOPE OF THIS EVALUATION

The mandate of the RDB/Tourism and Conservation Department is “To conserve the rich biodiversity of the Protected Areas and to develop sustainable tourism in collaboration with stakeholders for the benefit of all the Rwandan People”.

RDB has been working closely with partners, including the Wildlife Conservation Society (WCS), local communities and leaders to find ways of preserving Nyungwe National Park through park protection (increased number of rangers, construction of ranger posts, providing equipment for park protection, data collection, and providing various training to build capacity of park staff in park protection), tourism development, awareness campaigns, capacity building, and policy development. Wardens and rangers have been trained and ten patrol posts have been constructed to maintain control of the forest. Under this collaboration, Ranger-Based Monitoring (RBM) was introduced in Nyungwe in 2003 and MIST/GIS software was used to store analyze and provide information from RBM data. While RDB wardens and rangers have been focusing on RBM data collection, WCS has been investing in time and financial support for RBM/GIS training and data analysis to provide information for management of the park.

In 2010, a management meeting identified gaps and challenges for effective or improved RBM program in Nyungwe National Park. Identified key issues/challenges include:

1. Few RDB staff able to handle RBM/MIST data in Nyungwe National Park
2. Inadequate skills and supervision to collect, leading to a lot of mistakes and errors RBM data – hence, information from RBM was not reliable for decision making in regards of management of the park
3. Delay for data entry, data analysis and reporting to the park management; consequently, information from RBM data lost its role in decision making for the management of the park
4. A pile of data not entered into the computer for analysis – taking a lot of time to enter and analyze data
5. Delay of data analysis hence information was not reaching park manager in time
6. Data collected by rangers were stored in Excel files and difficult to manage for long time

The same meeting identified strategy and actions to address and overcome identified issues and challenges.

The strategy agreed upon was to build capacity of RDB staff at park level to fully manage RBM program from RBM data collection to RBM data analysis and sharing information to the management of the park. Major actions identified, planned and carried out in this strategy include:

- Build Capacity of RDB staff to handle RBM data through trainings – wardens and rangers at all patrol posts
- Building capacity of zones through more trainings - Refresher training in GIS and MIST, and training of trainers at ranger post level
- Developed RBM/ MIST GIS Training manual and data collection protocol
- Insure Databases from standalone PCs in patrol zones are synchronized with the central MIST database (at HQ) through database replication
- Provide equipment necessary for RBM data management
- Insure information generated from RBM/MIST GIS is shared and used for management of the Nyungwe National Park

With financial support from USAID, WCS and RDB/NNP developed and agreed a 24 month work plan (Annex I), with the objective to transfer knowledge, skills and attitude to RDB NNP staff in handling RBM data from data collection to data entry, data analysis and reporting.

Three specific objectives were agreed upon in 24 month work plan:

1. To put in place a system that ensures RBM information is in use by park management

2. To increase number of RDB staff who are familiar of MIST GIS
3. To provide equipment and material necessary for effective data collection and analysis, and provide information on time
4. To increase the use and sharing of information generated from RBM/MIST data for management of the NNP

It is therefore in this scope of work that this evaluation was carried out to assess the progress, achievement, and challenges during implementation of planned actions to meet defined objectives. This evaluation report highlights major achievement, activity in progress toward RBM sustainability, and challenges encountered during implementation of activities, and provides working recommendations for sustainability of Ranger-Based Monitoring in Nyungwe National Park.

1.2 METHODOLOGY

Data provided in this report were gathered from compiled reports and discussion with key park staffs fully involved in RBM data management. Consulted reports include meeting report, training reports, and RBM reports (monthly, quarterly and annual reports). Consultations with RDB staff included the Law Enforcement Warden, Research and Monitoring warden, two out of three head of zones and three head of ranger posts. WCS Research and Monitoring Manager also regularly monitored data entry, data analysis and reporting in terms of timing, quality of data and report contents.

2 ACHIEVEMENT AND PROGRESS TOWARD SET OBJECTIVES

To meet the objectives above, a number of actions were planned in partnership with RDB:

- Put in place a functional database system for RBM data management
- Develop MIST/GIS manuals / protocols
- RBM/MIST GIS training
- GIS training
- Refresher training course on RBM data collection
- Support quarterly meeting with key partners
- Insure Databases from stand alone PCs in patrol zones are synchronized with the central MIST database (at HQ) through database replication
- Provide equipment and materials for RBM data management

The detailed assessment of implementation of the planned activities, as they refer to the three main objectives of the hand-over plan, is discussed below.

Objective 1: The system is put in place to ensure RBM information is in use by park management

1.1 A functioning database system for RBM data management in place

MIST (which stands for Management Information System and Technology) is ecological software developed to manage Ranger-Based monitoring data. MIST software was developed as a tool for using data collected by the park rangers (mostly on illegal activities and animal encounters) during their patrols to provide crucial information for park managers. It is based on the Geographic information System (GIS), by which all data points collected by patrol are located geographically, allowing the information collected to be presented easily as maps or graphics.

By correcting for the effort, MIST also makes it easier for managers to assess the different levels of success and effort of wildlife patrols over time between different locations within the park and between patrol teams. MIST software is currently used in many countries of Africa (including Uganda, Democratic Republic of Congo, Gabon) and various countries of Asia (Cambodia, India, Russia, Thailand) among others. In Rwanda, MIST is used to manage RBM data in Nyungwe National Park (NNP) and Volcanoes National Park (PNV).

MIST software version 2.2 (Ecological Solution) was introduced by WCS in NNP in 2003 and later, with support from PAB, in PNV and ANP in 2007. From 2003 to July 2011, RBM data in Nyungwe National Park was stored and managed in one standalone MIST database (data forms were collected from 10 ranger posts and data were entered into MIST by one person and could take several days to complete this activity). In order to reduce this burden/barrier, RDB decided to decentralize data entry into three patrol zones (see the section of building capacity of head of zone) and RBM data are currently stored into two separated MIST database: (1) MIST database containing RBM data from September 2003 to July 2011, and (2) MIST database containing RBM data from August 2011. This database synchronizes data from 3 standalone database from three patrol zones database.

Application of the results generated from MIST in management of the park includes:

- Better planning of monitoring and patrolling efforts
- Enabling teams and park manager to adaptively respond to newly emerging or changing threats
- Standardized assessment of success across sites and over time
- Accurate and timely information generated to guide management decisions

MIST works better in the following major areas:

1. Data collection
When rangers are working in the field, they record Global Position System (GPS) waypoints which are in turn translated into patrol routes by MIST. They also record information/observations and activity carried out by them (e.g removed snare, arrests, mining sites, etc) associated with each waypoint, and record into designed and standardized form (datasheet).
2. Data storage
The information that rangers recorded on the forms is entered into MIST database, ready for analysis later on. MIST database can store huge amount of data and for many years
3. Analysis, evaluation and reporting
Once data are entered, information is pulled out of the MIST database, processed and presented as graphics, tables, charts and maps. The pulled information enables managers to easily compare effort, coverage and abundance (using abundance index) between different patrols, and across time and space.

1.2 Three MIST database (2nd database) were developed and are functional from Patrol Zones with a synchronized Central Database at Park Headquarter.

In addition to general database (2003-2011 database), the current system to manage RBM data in NNP consists of the three MIST databases (at the 3 patrol zones) and one Central database, which synchronizes patrol zone databases to park Headquarter (Figure 1). The reason behind the establishment of the three databases is to decentralize some of activities: GPS collection from patrol posts, data entry and pull out information from MIST for patrol planning. This function is well working up today by 3 head of zones who collect data, enter and analyze RBM data from their respective patrol zones, and Research and Monitoring warden who synchronizes all 3 databases in one standalone database at the headquarter.

The synchronization of central database is allowed and facilitated by database replication function in MIST 2.2. This function is also working well between patrol zones and central database.

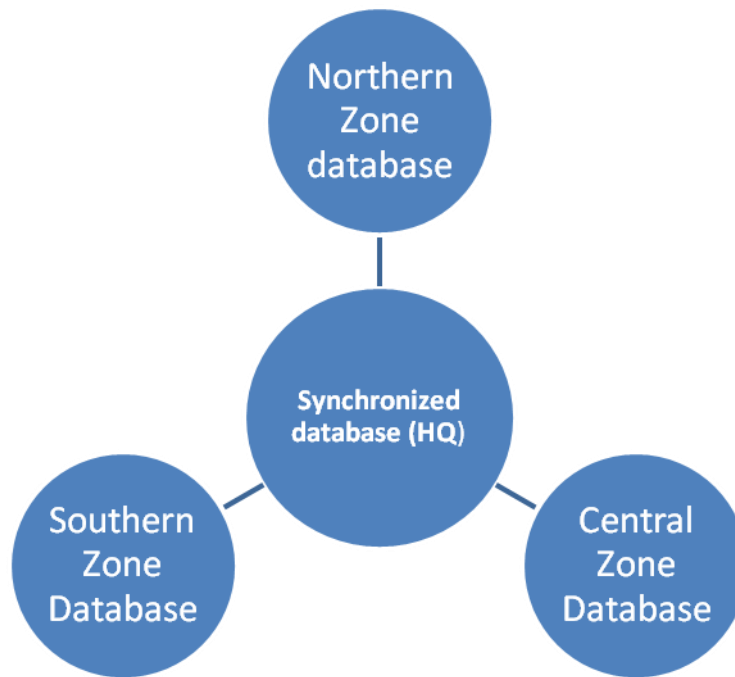


Figure 1. *MIST Database developed for RBM data management in Nyungwe National Park (Northern, Southern and Central MIST database are managed by Head of Zones and feed into HQ Central database which is managed by Research and Monitoring Warden assisted by Monitoring Agent)*

1.3 Roles and Responsibility

Three MIST databases at patrol zone levels are managed by Head of Zones for data entry and data analysis to produce basic reports for self-evaluation and planning for patrols, with supervision from Research and Monitoring Warden. Each Head of Zone screens errors recorded on forms or errors occurring during data entry. Head of Zones are also responsible to perform database replication (after data entry at the end of each month) and electronically send replication file to Research and Monitoring Warden through internet. Head of Zone are also responsible for planning and supervising data collection patrol to ensure the quality of data, and provide to rangers feedback of patrols of previous month.

Synchronized MIST database at park headquarter is managed by Research and Monitoring Warden and receives data from the three patrol zone databases via database replication.

The Head of Zones travel to the patrol posts on a monthly basis and collect datasheets and GPS records. Once back in their respective stations, they enter the data into the system, using the ground patrol data entry form (into MIST GIS), and produce reports. The reports are used by them and rangers from respective patrol post to plan patrols, and database are electronically sent to central database through replication function. In MIST, data entry is made through data downloaded from a GPS and the use of look-up tables. Head of zones and Research and Monitoring Warden were trained in carrying out this process and now they are able to carry out this process effectively.

Objective 2: Increased number of RDB staff who are familiar of MIST GIS

Increasing the number of RDB staffs familiar with MIST GIS is important, in order to address the issue of delay in data entry, data analysis and reporting, and to ensure that RBM data are correctly

collected, entered, analyzed and information provided in time for the management of the park. Data entry, data analysis and reporting should no longer rely on one individual. The strategy used to increase number of park staffs familiar with MIST GIS was to train a range of personnel at different levels, from rangers to Research and Monitoring Warden. The number was increased from 2 people (Monitoring Agent for data entry, and Research and Monitoring Warden for data analysis and reporting) to 8 people, which included 3 Head of Zones and their potential replacement if any of these cannot provide his duties. In addition to MIST GIS users, 15 RDB staffs were trained as trainers in RBM data collection at respective patrol posts. Familiarity with MIST GIS was assessed for training topics received (their relevance to RBM/MIST GIS), quality of data (data collection, data input), capacity of Head of Zone to handle RBM data, and different information generated from MIST GIS.

2.1 Current RBM data management structure

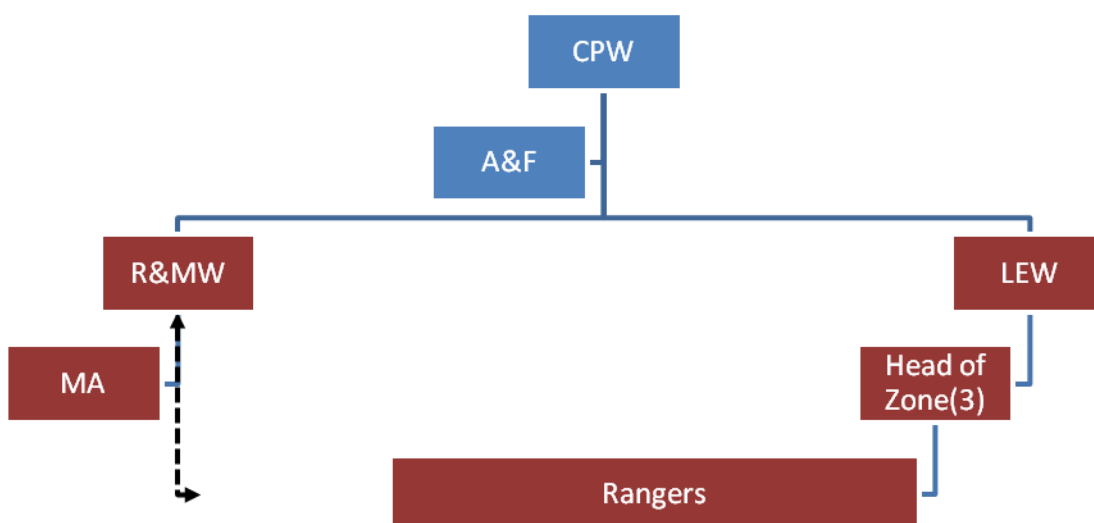


Figure 2. RBM data management structure in NNP (key: CPW: Chief Park Warden, A&F: Admin and Finance, R&MW: Research and Monitoring Warden, LEW: Law Enforcement Warden, MA: Monitoring Agent). In red, are people who received training either in RBM or MIST GIS or all together.

From the chart above, Chief Park Warden provides overall supervision and leadership in Park management in general including park protection and RBM system. Rangers and Head of Zones who are actively involved in RBM data collection are under the supervision and leadership of the Law Enforcement Warden. Rangers report to Head of Zones while each Head of Zone reports to LEW in form of verbal and brief written report; database replication and datasheets are handled to R&M Warden. The system works effectively in such way that RBM data are collected by rangers, and data are downloaded from GPS to computers on a monthly basis by Head of Zones. In general, database from patrol zones are replicated to the central database within five to ten days following the current month.

2.2 Training of RDB staff on MIST and GIS

Training in MIST and GIS aimed to increase number of RDB staff familiar and able to use MIST GIS for management of RBM data. WCS provided various sessions of training to the team and particularly to the RDB staff MIST and GIS users. The topics covered in these training sessions included:

- (1) Techniques of RBM data collection – 30 (50%) RDB rangers from 10 patrol posts were trained in detailed techniques for data collection and use of material used to collect RDM data. Errors in data collection were significantly reduced since this training was provided.

- (2) The use of MIST for data entry, data analysis and processing, and reporting, import and export MIST data,
- (3) MIST administrator (back up, restore, database replication, table browser, and MIST installation).
- (4) The team was trained on how to export spatial data created by MIST to ESRI ArcView GIS and how to export tables to Microsoft Excel for further analysis.
- (5) GIS application - Fifteen RDB staffs (the list in appendix) have received training in GIS, skills needed for mapping spatial distribution of illegal activities. We used ArcView 9.10 version and aimed to provide MIST GIS users with skills and familiarity with spatial data and mapping features. The topic covered in this session includes spatial data processing (data projection, merging, clipping, intersect feature, mapping illegal activities, and management of a map (example of generated map in appendix)).
- (6) Microsoft Excel - In addition, 15 park staffs were trained in Microsoft Excel and other relevant application to MIST GIS such as generating improved graphs and charts.
- (7) Training of Trainers - 15 RDB staff were trained as trainers for RBM data collection and management of MIST data. The trained RDB staff include: 3 Head of Zones, Research and Monitoring Warden, Monitoring Agent and rangers from 10 patrol posts. The training covered principles and techniques of RBM data collection, use of equipments to collect RBM data (GPS, maps, compass, etc), and MIST (MIST data recording, data processing and analysis, and management of MIST database (refer to RBM/MIST training manual)).

2.3 Assess Quality of Data

The emphasis in working with Head of Zones was on assessment of quality of RBM data. A way to assess the quality of data is to check whether the rangers are following the guidelines they were given during training sessions. During their patrols, the rangers should take a waypoint in each of the following situations:

- when starting and finishing a patrol;
- when stopping for a break;
- when making a relevant observation;

In addition to these specific events, even if nothing special happens, they should still regularly take a waypoint; at least every 30 minutes when they are walking. The idea is to be able to calculate the distance patrolled by the rangers with good accuracy. MIST draws the ranger's patrol routes by linking the waypoints belonging to a single patrol following their chronological order. Whenever the head of zone encounters a route looking like not being on chronological order, he should use datasheet to check the order of the waypoints against the time each was recorded.

A review of RBM data seems to indicate that the rangers follow the guidelines they received during the training session. However, a few points were located outside the park boundary; this could be due to the rangers recording waypoint from their patrol posts instead of recording waypoints from the edge of the park boundary.

2.4 Assess capacities of Head of Zone

Having assessed the quality of the data, we also wanted to assess the abilities of the Head of Zones. Head of Zones showed a good knowledge of MIST functionalities (data entry and report, database replication and basic map production), they are also able to do some basic database maintenance such as MIST installation, database back up, and database restore. Working with Research and Monitoring Warden, they will be able to fix most of the problems in relation with database maintenance whenever it occurs and they will occasionally contact WCS staff or Keven Saley whenever necessary. However, the best way to avoid such problem is to keep MIST database away from virus.

Head of Zones were also trained on some of GIS applications but they did not get opportunities to practice this due to delay of GIS license. This means that once they get GIS license, there should be a refresher course for them in GIS; alternatively, they may continue using map produced from MIST

for patrol planning and illustrative maps should be produced by Ezechiel Turikunkiko (Head of Zone) and Innocent Ndikubwimana (R&M Warden).

2.5 Improve Data Input

In terms of data entry, the best way to improve the quality of data seems to be the setting up of a schedule to be followed by the assistants every month (5th of the following month). All Head of Zones followed this schedule unless there was an unavoidable reason. Data were downloaded from GPS directly to the stand alone computer (laptop) using USB cable and DNR Garmin, a free software downloaded from the website. However, it was noted that MIST users (those who download data from GPS) need DNR Garmin version 5 to be able to download data from GPS Garmin 62 series. The system of zones for data entry and reporting was effective to speed up data entry and provide information for patrol planning. It was also noted that data download from GPS speeded up data entry and significantly reduced typing errors compared to when data were entered manually.

2.6 Data Analysis

MIST can provide regular updates on what is happening in the park with the production of distribution maps and the calculation of distance-related indices. Indices provide a measure of relative abundance and can be used in comparisons for monitoring, both over time and between patrol zones. Those maps and indices can be produced both for animal species and human activity records.

MIST also allows us to calculate the distance covered by each patrol and maps patrol coverage. These can be used as indicators of patrol efficiency and interpreted as survey effort.

Eight park staffs were trained in MIST data analysis and they were requested to pay attention to two important points when using MIST indices:

1. Firstly, ensure that the raw data are of good quality. As we saw earlier, a patrol distance calculated using a bad set of data would obviously provide wrong results. Indices calculated from those patrols would therefore also be incorrect.
2. Secondly, relate those indices to the patrol effort. In order to compare indices over time, the patrol effort within each patrol zone should be constant. In order to compare those indices between patrol zones, the survey effort should be identical in each.

This aspect was considered by Head of Zones and Research and Monitoring Warden, but to meet the above criteria, Head of Zones must play an important role in patrol planning and provide enough supervision on data collection. Uwinka, Kitabi and Gisovu patrol posts tend to concentrate their patrol efforts along roads and existing paths which may lead to erroneous conclusions about the status and trends of threats to these areas compared to other sites.

2.7 GIS Analysis

GIS analysis tool in MIST is not yet well developed for version 2.2, since one can display events but can't easily edit legend. However, this tool can be used to overlay different sets of data. For example, MIST can highlight all patrol blocks including one or more records. In the same way one can highlight all ranger blocks, including at least one waypoint recorded during the period of time queried.

For illustrative maps, we trained 15 park staffs in ArcMap GIS 9.10 application (resource mapping) using RBM data to produce better maps showing threat and species distribution. This subject should be repeated to include other applications that will enable park staff to use GIS for other applications necessary for the management of the park.

2.8 Trend Chart

MIST GIS tool allows us to show the temporal change in the total number of observations seen within a time period. For example, one could look at the number of snares recorded per month. An average of records per patrol and per month can also be displayed. For better display, we encouraged and trained MIST users to use Excel for trend charts and graphs. MIST users were trained on how to export data from MIST and use them in Excel spreadsheet to produce better trend charts and graphs. Three Head of Zones and Research and Monitoring Warden are able to produce good trend charts and graphs in Excel spreadsheet.

2.9 Reporting

Reporting template in MIST is in table format and summarizes observations in groups and provides patrol effort (number of days and number kilometers walked), and number of observation and encounter rates per kilometer for each observation. Following the trainings received during this transition period, all RDB MIST users (Head of Zone, and Research and Monitoring Warden) in Nyungwe can produce this report from MIST and report to the management of the park. This type of report is mostly produced at patrol zone level and is used for patrol planning purpose. Report format at park level is in Word format and includes major components:

- ✓ A brief summary of finding of reporting period (monthly, quarterly annual and a specific period)
- ✓ Patrol effort and patrol coverage – patrol effort is presented as number of kilometres walked for each patrol zone/post, and number of days walked in each zone. Patrol coverage is displayed on maps including base map (NNP boundary) and patrol grids. This part of report indicates number of patrol guided by the MIST results from previous month. (This is done based on planning session for previous month and implementation of that work plan.)
- ✓ Status and trends of illegal activities –the monthly report shows records of major threats in the park (poaching/snaring, tree/bamboo cutting, stone mining, fires and encroachment). The results are shown in encounter rates per kilometer walked and presented in form of graphs and trend charts, and illustrative maps. For annual and long term reports, the major records should be compared by months/year, and patrol zones including administrative sectors (if the report is intended to reach all stakeholders).
- ✓ Conclusion section – highlights summary of findings and highlights recommendations

Objective 3: To provide equipment and material necessary for effective data collection, analysis and provide information in time

3.1 Development of MIST/GIS manuals / protocols

A training manual was developed to describe in detail the methods/techniques/procedure of how to collect RBM data and a step by step guidance on how to use MIST for data entry, data analysis reporting, and MIST database management. It is written in simple language to guide senior park managers, Head of Zone as well as managers in the department of Research and Monitoring, how they can carry out ranger training on RBM. The training manual was also translated into Kinyarwanda, the language everyone at ranger post (with target of training of trainers) can read and use to improve RBM data collection and effectively be able to use materials used to collect RBM data.

In addition to training manual and RBM data collection protocol, a datasheet was reviewed and updated to match with required information from MIST GIS.

3.2 Topographic Map

Topographic maps with names of important areas in the park were developed and printed on different sized paper: A3 printed map will be carried out in patrol whenever necessary, A1 printed map will be permanently available at the ranger post for ranger to monitor areas covered on daily basis, and A0 printed map will be available at park headquarter.

3.3 Geographic Positioning System (GPS) and other equipment

Geographic Positioning System (GPS) is a vital tool for a successful RBM MIST program. It is important to highlight that the required GPS unit supported by MIST is GPS Garmin. Currently, RDB uses a number of GPS Garmin series (etrex, 60 and 62 series). We encourage rangers to use Etrex and 62 series for their good acquisition of satellite coverage under the forest canopy. WCS provided 30 GPS units, both Etrex and 62 series (2 GPS units at each patrol post).

Each Head of Zone was equipped with one computer laptop, one internet modem, one Pelican suitcase for safety of computer on rough road. We also provided sleeping bags and tents for rangers.

3.4 Solar chargers and rechargeable batteries

Provision of solar chargers and rechargeable batteries aimed to address the issue of shortage of power supply when people are out in patrols for many days.

Solar chargers and rechargeable batteries were provided to RDB rangers and were much more effective to sustain long patrols under tents and patrol posts where electricity power is limited. Solar chargers provided are flexible and do not add additional luggage to rangers who carries out patrols.

3.5 Ranger post construction

Two patrol posts were constructed and equipped in Cyamudongo and Gahurizo around Nyungwe National Park to accommodate rangers and facilitate patrol deployment for park protection and RBM data collection. Gahurizo patrol post was of great importance to increase patrol coverage, removal of snares and prevention and control of mining between Kitabi, Nshili and Bweyeye. Cyamudongo was of importance both to secure the area and to accommodate the chimpanzee trackers and rangers.

3.6 Computer laptops and pelican brief cases

Provision of computer laptops aimed to facilitate data entry, analysis and reporting from the field (ranger posts). WCS provided 3 computer laptop and 3 pelican brief cases (for the security of computer laptops on rough road) to 3 Head of Zones. These computer laptops were very useful to speed up data entry, analysis, and providing feedback to rangers at patrol posts.

The complete list of equipment provided is found on appendix.

Objective 4: The use and sharing of information generated from RBM/MIST data for management of Nyungwe National Park

The results from the RBM data analysis need to be presented to the project staff, project partners, other stakeholders in and around the Nyungwe National Park, and to external audiences.

It is particularly important to get monitoring results and analysis back to managers in a timely manner in order to effect changes in management approaches as quickly as possible. It is also of importance for RBM information to reach all level of partners such as ANICOs, local authorities at village, cell, sector and districts for them to understand their role in the management and conservation of Nyungwe National Park. Currently results from RBM are used in the areas outlined in sections 4.1 – 4.3.

4.1 Planning patrols and reviewing patrol coverage

Led to more directed management of patrols in most areas of the park, results reviewed on a monthly basis compared to three or more months of delay. Each month, the Head of Zones and Law Enforcement Warden work with rangers at patrol posts and plan for patrols in accordance with patrol coverage and concentration of threats in previous month.

4.2 Mapping locations of key threats

Maps and recorded data have been used to demonstrate increases in threats in the various districts. Data have been presented in various meetings with district officials in order to develop joint mitigation measures to curb the threats to park resources.

Maps and recorded data were used to demonstrate improvements in management to senior staff – the patrol coverage has improved from $\pm 60\%$ of patrol coverage per year to $> 85\%$ of patrol coverage per year.

4.3 Communicating results to an internal and external audience

RBM/MIST information has been shared among park management staff through oral presentations, discussion session, internal meetings, meeting with districts, meetings with communities (ANICO), monthly and annual reports. Internal meetings included RDB all departments and close partners and were held every three months to review and discuss RBM results and plan quick intervention whenever necessary. Meetings with district were planned and held every six months to develop RDB-District mitigation measures to major threats to the park resources.

In addition to meetings and reports, an information reporting format was developed, that is easy and cost effective in which information from RBM/MIST which can be filled in simple language for community, village, cell and sector level. This information should be shared on quarterly basis in planned “human-wildlife conflict resolution platform” at sector level.

5 RECOMMENDATIONS AND LESSONS LEARNED FOR SUSTAINABILITY OF RBM/MIST IN NYUNGWE NATIONAL PARK

Ranger-based monitoring is and shall remain a cost effective tool for monitoring threats to Rwandan national parks. The value and relevance of information generated from RBM MIST can now be seed for the management of the park. It is vital for RDB to consider some aspects when planning to carry out successful Ranger-Based Monitoring in the Rwandan national parks.

The following recommendations are based on the current situation and information available from Nyungwe National Park. It highlights action needed at all levels in this program.

1. Use of MIST alone does not lead to successful law enforcement – data recorded in MIST does not capture all data necessary for law enforcement. It does not include all information (name, origin and identification of arrested culprits), and most importantly it does not per se guarantee that follow up (in terms of apprehension of the offenders and the judicial follow up of their cases). For this reason, the information recorded with MIST GIS need to be used to effectively implement law enforcement in any given protected area.
2. MIST GIS works well where Senior Managers in PA want to see results documented – MIST GIS is time demanding when one needs to work on a lot of data on monthly basis. People tend to gradually lose interest and time allocated to RBM/MIST work. It is vital for the park authorities to regularly ask for reports/results and consider the information for management action planning and provide feedback to the source of information (rangers and Head of Zones).
3. It is crucial to have in place dedicated persons who are appointed to ensure that MIST works on the ground and to ensure MIST database maintenance (ensure database back up is done in time, bugs are fixed, and ensure data are entered correctly) – this is the task assigned to Research and Monitoring Warden with assistance of Head of Zones. This stage would also be a requirement for monthly reports to ensure that it is regularly done. Along with provision of feedback to rangers, it is recommended that RDB recognizes Head of Zones as they are key person in effective RBM program.
4. RBM is opportunistic-based data collection on illegal activities and rangers tend to concentrate their patrols along existing trails and road system. This is also influenced by the hardness and challenging rough terrain on which they work. It is recommended that for efficiency of information from RBM data, patrol coverage should be verified and rangers should be encouraged to cover as large an area of the park as they can. GPS guiding points may be required for some areas in the park. This will be covered during planning and feedback session to rangers and or Head of Zones.
5. RBM/MIST program will work well if results are fed back to rangers and interest for the results maintained – RBM data collection is time consuming and some rangers regard data collection as extra work for them. It is recommended that the results should be fed back to the rangers in their respective patrol post by Head of Zone or Research and Monitoring Warden. Whenever possible, invite them (head of patrol posts) in departmental meetings at least once every six months. In these meetings, rangers should get recognition of the work they are doing and appreciate the role of the information they help generate from RBM to the management of the park.

6. RBM/MIST system will be sustainable in NNP if RDB (park level and headquarter) continue to support it, both with time and funds—this program requires occasional refresher trainings, regular data collection supervision, meetings and field equipment/materials. It is vital for RDB to budget for:
 - a. Replacement of field equipment (GPS, solar chargers, rechargeable batteries),
 - b. Meetings (internal meetings) at least once every three months to share information for quick intervention for the management of the park,
 - c. Meetings with districts, sectors and cell at least every six months in order to share the results/information for park – partners joint mitigation measure development, evaluation and review each one's role in addressing threats to the park would be major themes of these meetings.
 - d. Cost for printing and distribution of the Kinyarwanda translated RBM results/reports to ANICOs, sector and cell authorities at least every quarter.
7. Working and getting support from partners – Information from RBM/MIST will help the management of the park if data and reports are shared with partners on regular basis. WCS will continue to provide technical support whenever needed but on minimized scale such as training on new skills available in relation with RBM/MIST.
8. Up-scaling MIST GIS to next level – MIST has currently limitations as we highlighted earlier; it is desired to go along with SMART software that WCS and the team is developing to incorporate some missing information:
 - a. Intelligence information and ways to measure its impact – this will help to measure and monitor information received from interagency (communities, ANICOs, administrative authorities) and its impact on planning patrols. Currently, such information is being provided from various informers but there is no way to monitor its impact to the effectiveness of patrol
 - b. Prosecutions of arrested suspects records – People arrested are currently reported to the police for prosecution. Some of them are sentenced while others are released before they are sentenced. Upgraded MIST (SMART) will provide a way of recording and following up on the judicial cases of the apprehended people.

SMART is currently being tested in a number of protected areas in Asia and Africa.

6 MAIN CHALLENGES ENCOUNTERED IN THE IMPLEMENTATION OF THE 24-MONTH TRANSITIONAL PERIOD

Two major challenges were encountered in the implementation of the 24-months transitional period. The first challenge concerns that the RDB structure does not include patrol zones in park staff structure – this was a challenge where Head of Zones were not feeling recognized or their work valued, though park management always told them that is doing advocacy to RDB headquarter.

The second recorded challenge concerns some individuals, who were slow in learning while others did not show motivation of doing RBM work – though all people were trained at the same level.

Other general issues regarding staff are:

- Staff that were trained but not in use – the objective of this program was to increase number of people who are familiar with MIST GIS. To achieve this objective, we trained at least 8 RDB staff in MIST GIS. Some of these have never get access to practice what they learned and before long they will forget what they learnt. It is recommended that Head of Zone can help them to practice what they learnt (such data entry, data analysis) so that they can perform these tasks when Head of Zones are not on duty for any reason.
- Staff turnover and replacement takes long time: out of three Head of Zone trained, only one is still on duties. This was the main challenge that required retraining, and many rangers who left the organization are not replaced and it has affected patrol coverage in Kitabi, Nshili and probably Uwinka.

RBM - MIST HAND-OVER PLAN (2011-2013)

Actions	Activities	Who to lead	Who involved	Target	Time-frame							
					Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8
Capacity Building	Develop MIST/GIS manuals / protocols	Felix	Partners	Training manual and data collection protocol completed		x	x					
	RBM / MIST training for RDB Wardens- Protection & research & monitoring	Felix	Partners	Complete familiarity with all aspects of MIST/GIS		x		x		x		
	RMB/MIST training for Zone heads	Felix	Partners	Familiarity with all aspects of MIST/GIS and able to train those below		x		x		x		
	GIS training for 4-6 key RDB staff for MIST	Felix	Partners	Confidence with analysing MIST data further in GIS using protocols								
	Training at zone level for basic data analysis and transfer to Kitabi	Felix	Partners	2 people minimum at each zone able to download, clean & send data to Kitabi		x		x		x		
	Training for use of solar chargers for GPS batteries	Felix	Partners	At least 4 people at each post able to effectively use GPS batteries			x				x	
	Training (mentoring) on monthly, quarterly and annual report production for RBM / MIST	Felix	Partners	At least 6 key RDB protection / R & M staff compile reports from templates	x	x	x	x	x	x	x	x
	Refresher training course on RBM data collection	Felix	Partners	At least 4 people from each patrol post are able to collect RBM data with minimum errors		x		x		x		
	General capacity building for key RDB Kigali staff on MIST/GIS	RDB	Partners	General familiarity with hardware, software and protocols					x			
	Support quarterly	RDB	Partners	RBM results are used for park	x	x	x	x	x	x	x	x

	meeting with key partners			management								
	Insure Databases from standalone PCs in patrol zones are synchronized with the central MIST database (at HQ) through database replication	Felix	Partners	MIST database for NNP is well maintained			x	x	x	x	x	x
	Create an information network linking the departments of R&M and other departments at park level	RDB	Partners	Information for RBM data accessed by key users at Park level			x		x			
	Insure feed-back to rangers on how the data they collect are being used for park management	RDB	Felix/ WCS		x	x	x	x	x	x	x	x
Hardware/ software provision	Provision of improved GPS units and carry cases	Aaron	RDB	All ranger posts have updated GPS units and cases		x						
	Assess power and communication possibilities at zonal HQ's	RDB		Overview obtained to guide hardware/software introduction		x						
	Provide basis 3 computers (MIST GIS installed) and wireless modems for basic data analysis & transfer, serial port cables (for PC desktops) and or serial port adapter for laptops	Aaron	Partners	Zonal offices all equipped for basic data download, cleaning & transfer		x						
	Provision of solar charging units & rechargeable	Aaron	Partners	Ranger posts all equipped with solar charging equipment		x						

	batteries for each ranger post for GPS											
Evaluation	Progress evaluation of MIST/GIS at all level at park level			MIST/GIS is effectively used for RBM data management				x				x

I) APPENDIX II

Assessment of the ANICO Program at Nyungwe National Park

June 5th – July 19th, 2013

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Executive Summary

This report considers two clusters of questions. First, is the ANICO program as it currently stands sustainable? And what can be done to improve its sustainability? Second, how should the program's performance be evaluated? What criteria can be used to assess the success or failure of the ANICO program? And what can be done to improve its prospects for success in the future?

Section 2 outlines the methodology we use in addressing these questions. Section 3 constructs a detailed “map” of the ANICOs’ core responsibilities. Before we could address sustainability or success, we had to form an accurate understanding of the ANICO program as it now exists in practice. Our map shows four key areas of ANICO responsibility: (1) reporting illegal activities, (2) educating communities, (3) mediating conflicts, and (4) creating alternative livelihoods. In each of these areas, our map describes the range of activities that ANICOs undertake to perform their duties effectively. We discovered, however, that there is disagreement among ANICOs and staff members about whether mediating conflicts and creating alternative livelihoods should be part of the ANICOs’ mandate.

Section 4 focuses on the question of sustainability. We suggest that there are three key dimensions to the ANICO program’s sustainability. The first dimension is the selection process: unless the right people are chosen to be ANICOs, and unless they form clear and accurate expectations about their positions, the program will be in trouble from the very beginning. The second dimension consists of the incentives that motivate (or fail to motivate) ANICOs to perform well once they have been selected: unless ANICOs have adequate incentives, they will not perform well in the long term. The third dimension involves the funding and institutional support the program will need now and in the future.

In evaluating the selection process, we found that there is considerable variation from cell to cell, and that some of this variation produces poor results: in some cases, cell executive secretaries make unilateral decisions and choose ANICOs who do not meet the desired criteria. We also found that, starting with the selection process, ANICOs form a range of expectations about their position, not all of them realistic (see quotes on page 8). We therefore recommend that the selection process be standardized, that communities be involved in choosing new ANICOs, and that a RDB or WCS staff member participate in person to ensure the integrity of the process and to articulate clear and accurate expectations to new volunteers.

Our discussion of incentives forms the heart of this report. We begin by reviewing the obstacles and difficulties confronting ANICOs in their work. We then review the current incentives that exist to motivate them to work diligently and to remain committed to the position. We conclude that the existing set of incentives is, as a general matter, inadequate: unless they are strengthened, the program will see substantial attrition and underperformance over time. The key problem, in our view, is that ANICOs do not receive regular attention, recognition, and feedback from WCS or RDB. Fully half of the ANICOs we interviewed said that building relationships with park managers and other officials, and *becoming known*, were important incentives for them. Without regular contact and support, it is easy for ANICOs to feel isolated and relatively forgotten. And for volunteers working without pay, these feelings can severely worsen performance.

We offer a number of specific recommendations that would, in our view, help motivate ANICOs to perform well. In making these recommendations, we try not to lose sight of the limited resources and staff time available to WCS and RDB. We try to frame recommendations that are feasible—as much as possible—within these constraints. We recommend the following:

- Most importantly, WCS/RDB staff should hold regular, one-on-one meetings with ANICOs to discuss problems, review plans for the future, and go over the ANICOs’ recent reports. We feel that these meetings would build stronger relationships between ANICOs and RDB/WCS and help the ANICOs feel valued as part of the team and motivated to perform well.
- ANICOs should receive feedback when they report illegal activity. When rangers follow up on these reports, ANICOs should be notified about the results. Knowing that their work has led to successful results will help motivate ANICOs to keep doing good work.

- ANICOs should be paid a small stipend to help them cover work-related costs, such as airtime and transportation costs incurred when visiting villages in their cell or when delivering written reports to WCS/RDB. Asking rural farmers to cover these costs themselves is, in our view, dispiriting.
- An annual or semi-annual celebration should be held to honor ANICOs' work, highlight best practices, and reward ANICOs who have performed especially well. These meetings, which could be combined with training sessions, would help ANICOs feel recognized and valued, and would also respond to the desire, stated by many ANICOs we interviewed, to learn from one another's work.

The third key dimension of sustainability is external funding and institutional support. Many of the staff we interviewed said that, if the program is to survive in the long term, it must eventually be handed over to RDB. To make this handover more likely, we argue that the ANICO program must be *delivering clear value* to RDB, and that this value must be *plainly visible* to government officials. The RDB staff we interviewed said that the ANICO program *is* delivering clear value, mainly in the information it provides about illegal activity in the park. Our interviews with cell executive secretaries also revealed that they value the ANICOs highly and that ANICOs help them do their jobs. But some interviewees also said that the program's value is not currently visible enough: since the ANICOs' own written reports are often vague and perfunctory, much of what the ANICOs do is undocumented. We therefore reiterate one of our previous recommendations: WCS/RDB staff should meet with ANICOs in person so that they can collect and record more detailed information about the ANICOs' activities and successes.

Section 5 of the report focuses on defining and measuring success. We return to the map outlined in section 2 and explore what success would mean, and how it could be measured, in each of the four core areas of ANICO responsibility. We also offer the following recommendations as to how the ANICOs' performance across these several areas could be improved:

- As suggested by RDB staff, ANICOs should work more closely with park rangers so that reports of illegal activity can be delivered more efficiently and so that they can learn the results of their reports. A joint training session could jump-start this collaboration.
- In cells that have long borders with the park, WCS/RDB should consider adding an extra ANICO. ANICOs often have trouble traveling long distances on a regular basis, so some villages are not well-integrated into the program.
- Data from ranger-based monitoring should be shared with ANICOs whenever possible to keep them up to date about threats to the park (and to apply pressure to ANICOs based in areas with high levels of illegal activity).
- RDB should carefully consider its decision to discontinue "consolation" payments for crops damaged by wild animals. A number of our interviews suggest that the national compensation law will prove ineffective at Nyungwe (see our analysis on pages 22-23). But the law's existence has raised expectations among farmers around Nyungwe, and if they are disappointed, it may not only damage park-community relations but also hurt the reputation of local ANICOs who have been helping farmers seek compensation under the new law.

Finally, we express some skepticism about the ANICOs' role in creating alternative livelihoods. Creating and overseeing a successful revenue-sharing cooperative requires a broad range of skills, including project design and management and proposal-writing, which are not easily taught in one-off, intermittent training sessions. In our view, training and supporting ANICOs in these activities would require a substantial new investment in capacity building and the hiring of new staff who specialize in community development. If WCS/RDB is unable to make this new investment, we recommend that the mandate for most ANICOs be narrowed, and that support for revenue-generating activities be limited to a small group of ANICOs who have shown the skill and initiative to succeed in this area.

1. Purpose

In the summer of 2013, we were asked by the Wildlife Conservation Society's Rwanda office to conduct an evaluation of the ANICO program around Nyungwe National Park. The key questions we were asked to investigate fall into two clusters: first, is the ANICO program as it currently stands sustainable? And what can be done to improve its sustainability? Second, how should the program's performance be evaluated? What

criteria can be used to assess the success or failure of the ANICO program as it now stands? And what can be done to improve its prospects for success in the future?

2. Methodology

In order to explore these questions, we conducted 26 interviews with ANICOs, local government officials (all of whom were executive secretaries of cells bordering the park), WCS staff, and Rwandan Development Board (RDB) staff. The following is a breakdown of the types of interviewees:

- 12 ANICOs
- 5 Cell executive secretaries
- 4 Current WCS staff members
- 1 Former WCS staff member
- 4 Current RDB staff members

All interviews were conducted between June 5th and July 19th, 2013. The average duration of each interview was around one hour, though some interviews ran as long as an hour and a half, and a few, because of schedule constraints, ran around a half hour.

The majority of these interviews—including all 12 of the ANICOs and all but one of the executive secretaries—were conducted in Kinyarwanda with the help of a translator. We worked with several translators: Claudine Tuyishime, Elie Musabyimana, Felix Mulindahabi, Esperance Mugiraneza, Christian Musafiri, and Ildephonse Kambogo, though Claudine Tuyishime was our translator most of the time. When our interviewees spoke strong English or French, we conducted the interviews in those languages without a translator.

Selection Criteria and Potential Sources of Bias

In choosing the ANICOs and executive secretaries to interview, we were constrained by distance, available transportation, and our translators' work schedules. We were therefore unable to use random sampling. Instead, we interviewed ANICOs and executives who worked in cells close to our office in Gisakura (within two hours of travel time), or who worked close to Kitabi and Kamembe, which we visited occasionally for WCS and RDB meetings.

Of the ANICOs we interviewed, 9 of the 12 received either a “good” or “very good” rating in the 2011-2012 performance report prepared by WCS. Of the remaining three, two were rated “fair” and one was rated “poor.” So readers should bear in mind that the data we gathered from ANICOs disproportionately reflect the perspectives of ANICOs who are rated highly. Also, since much of our data come from ANICO self-reporting, a certain predictable exaggeration can be expected. We hope to have mitigated this source of bias by speaking at length with executive secretaries and staff supervisors.

We chose to interview WCS and RDB staff members based on their knowledge of or responsibility for the ANICO program. So we interviewed the staff members who work most closely with the ANICOs day-to-day, and the managers who bear responsibility for the program's present and future success.

In preparing this report, we have drawn from our detailed notes taken during these 26 interviews.

3. Overview of Core ANICO Responsibilities

Before we could conduct an accurate assessment of the ANICO program, we had to first understand the core responsibilities associated with the ANICOs' position. Rather than relying on printed documents, we felt we should instead construct a “map” of the ANICOs' responsibilities based on the understanding and activities of the key participants in the program: the ANICOs themselves, the executive secretaries they work with, and the WCS and RDB staff members who supervise them. In this way, we hoped to construct a map that corresponds more closely to the reality—the existing norms and practices—of the current ANICO program.

Our map of the ANICOs' responsibilities involves four key areas of responsibility, each of which contributes directly to the conservation mission of WCS and RDB:

- A. *Reporting Illegal Activities*
- B. *Educating Communities*
- C. *Mediating Conflicts**
- D. *Creating Alternative Livelihoods**

* Virtually all of our interviewees agree that A. and B. describe core areas of ANICO responsibility. There is disagreement, however, about C. and D.: not all interviewees describe these as core ANICO responsibilities; in fact, some interviewees claim that they are *not* part of the ANICO's mandate.

A. *Reporting Illegal Activities*

One of the central responsibilities of the ANICO is to report illegal activity that threatens the forest to park officials. Since RDB has limited presence in the communities around the park, they rely on information produced by community members, and the ANICOs form a key part of their information-gathering strategy. Without accurate and timely information about threats to the park, RDB cannot respond effectively and protect the forest.

The following activities enable the ANICOs to effectively report illegal activity:

- Cultivating a network of reliable “informants,” not only in their own villages but in other villages in their cell, especially those bordering the park. Some ANICOs report that these informants are ex-poachers or miners themselves and/or are community members currently benefiting from revenue sharing.
- Traveling regularly to other villages along the park boundary to develop and maintain personal relationships with informants, and in general to build trust in these communities.
- Delivering information quickly (typically over the phone) about imminent or ongoing threats to the park to WCS or RDB staff.
- Developing a working relationship with local officials who can help identify lawbreakers, enforce the law locally, and provide “cover” for the ANICOs when they report lawbreakers to RDB (so that they can avoid personal danger or retaliation).
- Conducting site visits, sometimes in conjunction with local government officials, to gather information about possible illegal activities.

B. *Educating Communities*

Educating local communities about the value of the park and about the laws protecting the park is another central ANICO responsibility. ANICOs form a key component of the long-term strategy to change community attitudes about Nyungwe National Park. In order to protect the park in the long term, it is important that local residents themselves come to appreciate both the value that the forest brings to their own communities and the risks involved in entering the park illegally.

The following activities enable the ANICOs to educate community members about the park:

- Participating regularly in community meetings, both at the village level and the cell level, during which they can deliver information about the park and the laws protecting it.
- Developing good working relationships with the local officials who convene the meetings and control the meeting agendas.
- Traveling to different villages in their cell to cultivate relationships with village officials.
- Meeting separately with people suspected of illegal activity in the park—either individually or in groups—to try to persuade them to change their behavior.
- Developing different messages for different groups: when addressing people suspected of illegal behavior, for example, ANICOs often emphasize the punishments associated with illegal use of the park and also draw attention to alternative economic opportunities that might substitute for illegal revenue.

Successful community education also enables the ANICOs to report illegal activities more effectively: community members who are convinced of the value of the park to their community—and who feel they benefit directly from it—are more likely to be willing to serve as informants.

C. Mediating Conflicts

Some ANICOs describe conflict mediation as an important part of their responsibilities. Two kinds of conflict are at issue: first, human-wildlife conflict, usually caused by animals from the forest raiding and destroying crops; second, conflict between the communities and park management. Some ANICO view themselves as mediators who can help find practical solutions and defuse anger in the community.

The following activities enable ANICOs to help mediate conflict in their communities:

- Visiting the site of human-wildlife conflicts and speaking directly with property owners about their problem.
- Communicating cases of human-wildlife conflict to park officials.
- Helping evaluate the extent of the damage to crops and other property (sometimes with the help of the executive secretaries).
- Coaching property owners about strategies for keeping animals away from their crops.
- Helping property owners file compensation claims, and sometimes negotiating compensation directly with park officials.

D. Creating Alternative Livelihoods

The fourth core set of ANICO responsibilities concerns the creation of alternative economic opportunities, mainly for people who currently resort to illegal activity in the park (poaching, tree cutting, mining, etc.). Many of our interviewees have emphasized the importance of alternative economic opportunities: people who resort to illegal activity in the park are often very poor and cannot afford to relinquish these activities unless they can find other ways of meeting their needs.

The following activities enable ANICOs to help create alternative livelihoods:

- Helping local residents form associations or cooperatives, assisting in the creation of these associations or cooperatives.
- Drafting proposals to win funding support for revenue-generating cooperatives, either from the public revenue sharing funds or from other potential donors.
- Providing management support and oversight for cooperatives once they're up and running.
- Providing technical support in the revenue-generating activity itself (for example, raising pigs or chickens, cultivating pineapple or passion fruit, administering small-scale loans, etc.)

It has also been proposed that ANICOs could help District level officials vet and select community projects for funding by the revenue-sharing program.

4. Sustainability of the ANICO Program

The question of sustainability in the ANICO system must be asked at several levels: First, is the program recruiting the right people to be ANICOs? Second, will the program be able to retain current ANICOs and motivate them to perform well in the years to come (that is, are the right incentives, motivations, and support systems in place)? Third, is the overall program itself sustainable: does it have the financial and institutional support necessary to keep it up and running from year to year? The first two levels concern the program's "internal" sustainability; the third concerns its "external" sustainability.

A. Internal Sustainability: The Selection Process

When a new ANICO is needed, WCS and RDB communicate their selection criteria to local government leaders at the cell level. Because of the distance and staff time involved, WCS and RDB staff do not typically participate in the selection of new ANICOs. The ensuing selection process varies from cell to cell. Three of the

5 cell executive secretaries we spoke with reported that their ANICOs were selected through elections held in community assemblies. One, the cell executive secretary of Gatare, reported that they selected their ANICO through a cell committee meeting that also included village leaders. (The final cell secretary we spoke with was not present at the time of his ANICO's selection.) We have also heard through our interviews with RDB staff that some ANICOs are selected through a unilateral decision made by the cell executive secretary.

While WCS and RDB staff say they are satisfied with many of the appointment decisions made at the cell level, they also report problems. In some cases, the criteria supplied by WCS and RDB were disregarded, and cell executive secretaries chose relatives or friends, believing the ANICO position might open up future job opportunities for them. Some of these appointments resulted in ANICOs who were not well-suited for the position and needed to be replaced, which wasted time and resources.

Recommendation(1): Careful attention should be paid to designing a standard selection process that is most likely to yield ANICOs who meet the desired criteria. Local government officials' involvement in the selection of ANICOs is important, since they know community members well and since the ANICOs will have to be able to work with these same officials. However, some measure of community involvement may help ensure that the executive secretary doesn't simply appoint a friend of family member who does not meet the criteria. (So, for example, the executive secretary could nominate 3 to 5 candidates, and the community could then choose the candidate it prefers by election.) It is also possible that a community election—instead of a behind-the-scenes appointment by the cell secretary alone—would help ANICOs to feel that they have a clearer mandate from the community, giving them a greater sense of responsibility and pride. This form of appointment may also help make sure communities know *who* the ANICO is, as well as *what* the ANICO is supposed to do.

Choosing the right people is crucial to the long-term sustainability of the ANICO program. When the program was restarted, for example, it was thought that young people might make the best ANICOs, because they tend to be better educated and to bring greater energy and creativity to the program. While this may be true in some cases, there have been several problems with younger ANICOs. Most importantly, young people tend to be less settled than older, more established community members. They are more likely to leave the area for marriage, school, or job opportunities. When an ANICO leaves, he takes with him the time and resources invested in his training as well as the relationships he has built with the community and local government. Younger ANICOs may also have more trouble commanding the respect and attention of village leaders and elders.

Next, we believe that the initial communication with potential ANICOs is very important for later retention. It is essential that ANICOs start the job with a clear idea of their responsibilities, the obstacles they might face, and the time commitment involved. Ensuring the ANICOs have this information early in the process will help eliminate candidates who are not willing to commit to the job.

[When I first agreed to be an ANICO] I wasn't thinking I would have a lot of activities; but I have found that it's very time consuming. But because I agreed and I am committed, I don't have a problem with that.

ANICO, Bweyeye sector

ANICOs should be clearly aware of the responsibilities they are undertaking before time and resources are invested in their training. Two of the ANICOs we interviewed also said that they would like a more clearly defined work plan—a set of goals, activities, and targets decided between them and RDB, perhaps tailored to their particular cell and the kinds of challenges present there.

It is also very important that new ANICOs have realistic expectations about the benefits they will receive from their position. If their expectations—for example, of future employment stemming from their work with the ANICO program, or of rewards for good performance—are unlikely to be met, the program will suffer from their disappointment. They will lose motivation or quit their positions.

Consider these three excerpts from ANICO interviews:

I accepted with no expectation. But if I work well, maybe RDB will employ me or I will be rewarded.

ANICO, Bweyeye sector

Some ANICO have been promised jobs on various government projects—they’ve been told “if opportunities arise, you’ll be first in line.”

ANICO, Gatare sector

When we were first trained for the job, we were told we would not be paid. But we’ve seen many examples of other volunteers (in health, nutrition, or working for the Red Cross) who gained something in time—so there’s hope for a long-term gain....When we are in training, ANICOs are given money for transport fees and other things; we’re also told that if we work well, we’ll get more in the future....I have the courage to continue because I hope that the people who appointed me are evaluating me in ways I don’t know and see my good work.... For now, there’s nothing I don’t like about being an ANICO. But I would complain if I don’t get anything in the future; if nothing comes of my good work—that is, if promises are not kept. If ANICOs do a good job, they should gain something.

ANICO, Bushekeri sector

We believe that understanding and managing expectations will be a critical to the retention of ANICO (and, by extension, to the program’s sustainability).

Recommendation(2): WCS and RDB staff should consider sending a staff member to participate in person in the ANICO selection process. Since the selection process is such an important part of the program, it seems to us well worth the investment. The participating staff member could, first of all, help ensure that the selection process is sound, in keeping with **Recommendation(1)**. Second, he or she could take care to communicate clear and accurate expectations to the new ANICO—or to volunteers who have presented themselves for consideration—to avoid mistaken assumptions and hopes. At minimum, this could amount to a conversation with government officials at the start of the process, to make sure the criteria are clear, and a conversation with ANICO candidates, to make sure they fully understand the position before they commit. If staff time is unavailable, perhaps a trusted, successful ANICO from another cell could be sent to participate in the process instead.

B. Internal Sustainability: Incentives

In evaluating the sustainability of the ANICO program, it is necessary to ask: What currently motivates individual ANICOs to do this voluntary work? And what incentives could be provided as part of the ANICO structure to help retain and encourage ANICOs who work well? In order to answer these questions, we must first make note of the obstacles and difficulties that confront the ANICOs in their work.

Obstacles and Difficulties

The ANICO’s work can be difficult and time-consuming. Some ANICOs we spoke with reported that they engage in daily activities—that they are always on call. Others said that they set aside between one and three days per week for visiting communities as part of their ANICO responsibilities. And as we discussed in section 3, they are called upon to perform a wide range of different tasks.

Moreover, ANICOs often have to use their own resources to cover costs. This was a recurring source of concern for the ANICOs we interviewed: some said that they had to pay for airtime to report problems to the park, to pay their own transportation costs when delivering reports to the cell office or visiting different villages within their cell, or to buy supplies for their work (e.g., extra paper for reports or even soda to reward informants).

Many of our interviewees emphasized problems with the submission of ANICOs’ written reports. The expense of traveling delays submission, and some reports are lost as they are transmitted from the cell offices to the sector or district offices.

Since ANICOs report their neighbors to law enforcement, being an ANICO can also lead to strained relations with the local community. Several of the ANICOs we spoke with reported that they sometimes worry for their safety and that they try to submit lists of illegal users secretly, so people will not know who made the report.

The law enforcement warden also told us that one ANICO's house was lit on fire by poachers in his community.

In the village, it's known that this is a volunteer position and that I am not actually employed. Community members also know that I am the one giving information to park management. So ANICOs fear for their safety. People do bad things to us.

ANICO, Bweyeye sector

When I first started, people got angry and just saw me as someone who was reporting people. After time, though, they're familiar with me—it took a lot of time explaining the value of the park to get people to change their attitudes toward me.

ANICO, Ruharambuga sector

Sometimes the community fears me—they think I am going to report them. I have to report people in a secret way (I inform local authorities who can follow up themselves)—I don't want the community to know that I'm the one who reported. I worry for my safety.

ANICO, Nkungu sector

Given these various difficulties, what currently motivates ANICOs to do their work?

Current Incentives

Almost all the ANICOs we interviewed said that their primary motivation was a commitment to conservation and park protection.

Before being an ANICO, I wanted to contribute in some way to park conservation, but I didn't have a formal role, so I didn't feel I had the right to say anything to the community. I feel lucky to be an ANICO because it gives me the opportunity to talk about the park.

ANICO, Bushekeri sector

For this ANICO and many others, the ANICO position is a source of legitimacy in the community and an opportunity to participate more actively in conservation. We do not doubt that many of the ANICOs we interviewed are motivated in large part by their commitment to the cause and their desire to do good work. However, given the time commitment and workload associated with being an ANICO, we also tried to dig deeper to understand the personal benefits an ANICO might receive from doing this work. In our interviews, the most commonly stated benefit of the ANICO position was the opportunity to build relationships with local government officials as well as RDB and WCS staff (6 of the 12 listed this as a primary motivation). Being an ANICO is a chance to be known and respected by important people—relationships that ANICOs hope may bring them benefits and opportunities in the future.

ANICO also list the following additional benefits:

- Increased status in their communities;
- Opportunities to be educated about the park (i.e., it is a learning experience);
- Training in valuable skills, such as proposal writing and project management;
- Transport fees when they attend meetings or trainings hosted by WCS or RDB (the amount given often exceeds their actual transportation costs—or ANICO opt to walk to the meeting and save the money—so they come home from the meeting with a little extra cash);
- The opportunity to visit the park and see chimpanzees.

Finally, there is the cooperative of ANICOs in Rusizi district that has started a poultry project with the help of revenue-sharing funds.

When we were first asked to prepare this report, we were asked to learn what incentives should exist to retain and motivate good volunteers. So the first question we should address is this:

Are the benefits we have just listed adequate in light of the obstacles and difficulties we summarized at the start of this section?

The answer to this question varies from one ANICO to another. ANICOs who are more deeply committed to park conservation, for example, require fewer tangible incentives to do their work well. The answer also depends on the scope of the ANICOs' responsibilities: the more ANICOs are asked to do, the greater the incentives that will be required to motivate them. In general, however, our answer is no: the current incentives are not adequate. Unless they are strengthened, the program will see substantial attrition and underperformance over time.

Given that so many ANICOs highly value the opportunity to develop relationships with park staff and other officials, it is essential that program managers take steps to ensure that ANICOs feel recognized and valued—that they feel like they are part of the team. If ANICOs feel instead that they are isolated and forgotten, or that WCS/RDB take their reports but do not really respect their time and effort, they are much more likely to lose patience with their position.

Supervision is also a problem: as a volunteer, if I don't see you often, I begin to lose interest. If I don't get feedback on my reporting, same. The only time they interact are when they're called for meetings or trainings. We need to reach out to them, not simply to call them in.... This is mainly a planning problem: we need to have a focal person who is solely in charge of the ANICO. The community conservation wardens are a little stretched.

RDB staff member

When three or four months pass without meetings, the amount of information transmitted from ANICOs decreases. Meetings have to be kept up regularly, but meetings are expensive ...

RDB staff member

Regular follow-up is lacking here at Nyungwe.... In Akagera, the relationships [with ANICOs] were better developed. Whenever there were park-wide events or meetings, the ANICOs were immediately invited and included. There was also regular follow-up: more meetings with the ANICOs.

RDB staff member

The ideal would be quarterly meetings of all ANICOs to discuss challenges and achievements. During those meetings, you would go over reports, talk about RDB follow up and what has been achieved. Again, there's need to provide psychological incentives by showing what has been accomplished.

WCS staff member

At present, not enough is being done to recognize the ANICOs' work. Training sessions and general meetings of all ANICOs are infrequent. WCS and/or RDB staff do not seem to visit ANICOs individually, on a regular basis, to discuss their problems, their reports, or their progress. ANICOs do not receive regular feedback or follow-up on their reports (either their phone reports or their written reports). The majority of the recognition and reinforcement that ANICOs presently receive comes from the cell executive secretaries who work with them regularly.

Currently turnover [among the ANICO] isn't too high, but the worry is that it will be (it has only been two years since the re-start of the program).

WCS staff member

Relatively simple measures can be taken to correct these deficiencies. These measures would require staff time and modest expense, but they would prove to be worthwhile investments, we believe, if WCS and RDB truly want the ANICO program to last. We realize that tight budgets (and limited staff time) may prevent management from pursuing all of these recommendations, so we list the most important and most cost-effective recommendations first.

Recommendation(3): WCS/RDB staff should meet individually with every ANICO on a regular basis to discuss problems, to review plans for the coming months, and to discuss the ANICO's recent reports. Regular meetings between an RDB or WCS staff member and individual ANICOs are, we

believe, critical to the program's sustainability—in fact, we believe that this is the single most important recommendation we make in this report. One-on-one meetings would allow individual relationships to be built, and trust and goodwill developed, over time. They also would ensure that ANICOs feel valued by their managers. Finally, as we emphasize in the next section, they would enable more thorough data collection about ANICOs' work and accomplishments. The quotations we provided earlier in this section show that RDB and WCS staff already understand the importance of regular meetings and relationship-building with their volunteers. It is now simply a matter of acting on this knowledge. We realize staff time is stretched and resources are tight, so these meetings should be arranged as much as possible to coincide with other activities (for example, if the team is participating in a school visit or is visiting a cooperative or attending a meeting, one staff member should also make time to meet with the local ANICO). Previous reports have recommended that a new RDB warden be hired specifically to oversee the ANICO program. If such a person were hired, he or she could be put in charge of these regular, one-on-one meetings.

Recommendation(4): Many ANICOs say they do the work because they care about conservation and want to contribute. It is important, therefore, that ANICOs be able to see the results of their good work. When ANICOs report illegal activity to the park, they should receive feedback about the actions that were taken as a result of their reports. They should know that their efforts have made a difference. This feedback would serve two purposes: it would remind the ANICOs that their work is making a real contribution to park protection and it would also communicate to the ANICOs that they are valued members of the team. Taking the time to make a phone call to follow up on a report is a sign of respect (and, conversely, not taking the time to follow up could be seen as a sign of disrespect). This could be more easily accomplished if the community conservation wardens also received feedback from the law enforcement team about reports that they forward. At present, to our knowledge, they do not receive such feedback.

Recommendation(5): Every ANICO should get a small stipend every year, to cover work-related expenses (airtime, transportation costs for delivering reports and visiting communities, supplies needed for performing their duties). It could be a fixed amount, so that ANICOs could then decide how to allocate the money most efficiently. The stipend would not necessarily cover all of the ANICOs' work-related expenses, but it would help to ensure that the position does not create undue financial burdens. In our view, asking ANICOs to cover work-related expenses using their own modest resources is discouraging and makes ANICOs feel overburdened and underappreciated.

Recommendation(6): Even though resources are limited, we believe that WCS/RDB should organize a regular celebration of the ANICOs' work (perhaps an annual or semi-annual event, which could be combined with the ANICO training sessions). Ideally, this would be a gathering of all ANICOs, where exceptional work would be celebrated and where ideas and strategies could be shared. Almost all of the ANICOs we spoke with told us they would appreciate more opportunities to meet with other ANICOs. We believe information-sharing is vital in this job, since it requires a great deal of innovation and initiative on the part of the individual. These meetings would serve several important functions. First, they would show the ANICO that WCS/RDB acknowledges and respects the work that they do. They would convey gratitude for the many hours ANICOs work (unpaid) for the protection of the park. Second, they would help motivate ANICOs by highlighting successes and providing evidence that ANICOs can make a difference. Third, these meetings might also provide a chance to commiserate with others working under similar conditions and to combat feelings of isolation that might discourage volunteers.

Recommendation(7): These regular celebrations would be strengthened if they were also coupled with some kind of prize or reward for the best ANICOs. The reward could be money, or it could be a trip (for example, the top ten performers for that year could get a trip to the Volcanoes National Park to see gorillas or to Kigali or Akagera). Several ANICOs and staff members have said that the promise of a prize or performance pay for ANICOs who perform well would help to motivate everyone.

In our conversations with ANICOs, staff and executive secretaries, a range of other suggestions were offered for improving the sustainability of the system, including the following:

- To help ANICO deliver their reports, they could collaborate with the “heads of zones” in the law enforcement department. Each of the officers supervises three or four ranger posts and has access to a motorcycle, so they could be made responsible for the collection of ANICO reports and their delivery to sector offices.
- An arrangement should be made so that the ANICOs can make free phone calls to government and RDB (perhaps a toll-free number).
- One ANICO per sector could be made responsible for collecting the reports from all of the other ANICOs in his or her sector and delivering them to the sector office. All of the ANICOs in the sector would rotate through this position.
- The reporting template could be revised and simplified, and ANICO could call in their reports, dictating them to a WCS staff member, who would type the report as the ANICO talks. It is possible that airtime for these phone calls would cost less than the transportation costs associated with report delivery (according to one staff member) and this might reduce the time ANICOs must spend delivering their reports. The key drawback to this proposal, in our view, is that it would consume a great deal of valuable staff time each quarter.
- ANICOs could be given preferential park access. For example, they and one guest would be allowed free access to park activities.
- Some ANICOs have requested bicycles to help them travel to communities or to submit reports.
- An alternative to the rewards described in **Recommendation(5)** would be a system of modest performance pay, which would pay a small amount of money for successfully completed tasks. For instance: a report of illegal activity that leads to an arrest would be rewarded with a small payment. We have learned that a similar system is currently used to reward health volunteers in Rwanda. There are potential disadvantages to this strategy, however: some of the ANICOs’ responsibilities are long-term and difficult to separate into discrete tasks. For example, the community education mandate is a very important part of the ANICO’s work, but it would be difficult to reward it effectively with performance pay without creating perverse incentives. If ANICO were rewarded for simply holding a certain number of community meetings, they would have an incentive to hold as many meetings as possible, regardless of the quality of information delivered or the need for repeated community gatherings. Performance pay could also cause ANICO to reallocate their time to favor discrete tasks that are rewarded and neglect longer-term projects. In other words, unless it is very carefully designed, a system of performance pay might create more problems than it solves.
- ANICOs could be grouped into district-level cooperatives. Together, they would decide on an income generating activity and then compete for a share of the revenue-sharing funds. Beyond generating revenue, these cooperatives would also provide a reason and opportunity for ANICOs to meet more regularly, and share ideas. This strategy is already being piloted in two districts. The main challenge so far is that the districts are large and it has been very difficult for ANICOs to travel to the site of the cooperative regularly. It might be more practical for ANICO cooperatives to be at the sector level (and perhaps cooperative meetings and the submission of quarterly reports could be done at the same time). There are two other concerns about this strategy: first, some staff members are concerned that the income generating activities associated with the cooperative will distract ANICOs from their volunteer activities, and second, if revenue-sharing money is truly intended for the very poor, ANICOs, who tend to be better educated and relatively stable financially, are not the target beneficiaries.
- ANICOs could be employed as advisors or “mentors” within local cooperatives (perhaps in cooperatives they themselves helped organize). A small portion of the cooperative’s revenues could then be paid to the ANICO, who would be responsible for overseeing the operations of the cooperative and troubleshooting. This could also serve as an incentive for ANICOs to create new cooperatives.

The most vulnerable should be getting the revenue-sharing funds, but they ought to be organized by ANICOs....This way the ANICO will get respect for helping the community; the ANICO will help link the funding to conservation, making it clear to the cooperative members where the money comes from; and the ANICO will get resources through revenue sharing, which will serve as incentive....This deepens their attachment to the park.

RDB staff member

C. External Sustainability

ANICOs are currently trained and equipped by WCS. That is, when meetings or trainings are held, or equipment is supplied, the money comes from WCS grants. But what happens to the ANICO program if/when the WCS money runs out? RDB already collaborates closely with ANICOs, primarily through the community conservation wardens, but in order for the program's long-term survival to be ensured, government must eventually be willing to fund and support it. A firm commitment from government would not only render the ANICO program more stable and sustainable in the long term, it might also supply additional funds for some of the incentives that we recommended in the previous section.

When we asked about an ideal long-term model for the ANICO program, several staff members described the current system for Rwanda's volunteer health workers, which is supported and funded by the Ministry of Health. Like ANICOs, volunteers are chosen from within the communities. They are trained in basic health care provision, but, unlike the ANICOs, they receive performance-based pay drawn from public funds.

How might government be persuaded to assume responsibility for the ANICO program? In our view, at least three conditions must be met. First, the program must be *clearly defined*: there must be consensus about the program's key objectives. Second, the ANICO program must be *valued* by government (especially RDB). And third, its value must be *visible* to key public officials. Since the first condition is self-explanatory, we focus on the second and third here.

Is the ANICO program valuable to public officials?

RDB staff members emphasized that community conservation is an important part of RDB's mandate—and that the ANICOs are a big piece of the community conservation strategy. ANICOs are also considered by the law enforcement warden to be key informants about illegal activities originating in the communities bordering the park. The law enforcement warden says that he receives reports from ANICOs roughly every two weeks.

In addition, all five cell executive secretaries we interviewed reported that they work closely with their local ANICOs and greatly value their work. All five also said that ANICOs make their job easier. Since conservation objectives are written into the executive secretaries' performance contracts, they value the ANICOs' conservation work. One cell secretary told us that conservation objectives have grown more important in recent years, and that they are now written into the performance contracts of village leaders as well. In some cells, the ANICOs participate regularly in the cell committee meetings, taking the lead on environmental questions and plans.

There's a strong collaboration between me and the ANICO. For every activity related to conservation, we do joint planning. The ANICO communicates to me about illegal activities. He has no official mandate for enforcement, so I go into the field to meet the illegal users and threaten them with fines....In our mandate, executive secretaries have to conserve the environment and the park. The ANICO is very helpful in this goal. He has more knowledge about the park because of his training and he can bring conservation expertise.

Cell executive secretary, Nkungu sector

[The ANIICO] and I make joint plans to visit field sites. We sometimes go together to meet people suspected of poaching and marijuana growing. We talk to people about the importance of the park and warn them not to continue. We also help them join RDB cooperatives, such as the trail-building cooperative that's run out of Banda.

Cell executive secretary, Rangiro sector

Without the ANICO, my work would be more difficult. I would have to look out for the forest and do sensitization myself.

Cell executive secretary, Nkungu sector

The ANICO helps me do my own job. The park is a public resource. As the executive secretary, it's my job to protect public resources. So the ANICO helps me realize my own goals. Without the ANICO, it would be more difficult to protect the park....I don't agree with those who say that conservation isn't important to local government. In every annual budget, there's a sum dedicated to environmental protection. And for my cell, forest conservation is the key to environmental protection.

The ANICO helps me a lot. We have a strong collaboration. Whenever he gets information about illegal activity or human-wildlife conflict, I am made aware. I get this information from the ANICO even before he reports it to the park....When he reports illegal activity, if he hasn't already gone to the site, then we go together....I used to work as executive secretary in a different cell bordering Nyungwe, when the ANICO structure wasn't yet established. Now that I have an ANICO, my work is a lot easier. In the previous sector, I was in charge of everything related to park protection. But the rangers didn't always keep me informed—information would reach the sector office without my knowledge and this would create problems for me. The ANICO works closely with me and keeps me informed....He is a small miracle for me.

Cell executive secretary, Bushekeri sector

From what we have seen, ANICOs have demonstrated some value to RDB—especially through their reports of illegal activities and their role as conservation educators in their communities. However, it seems that it is the cell executive secretaries who work most closely with the ANICOs, and they repeatedly emphasized the value of the ANICOs in meeting local government's environmental goals. These executive secretaries might be an important resource of support to tap when the time comes to make the case for government funding for the ANICO program.

Is the value of the ANICO program visible to public officials?

At the moment, the program isn't big or strong enough to attract government investment. The goal is to strengthen the program to make it worthy of government investment later on. Information sharing is key. So much is being done on the ground: the meetings ANICOs are holding, their collaborations with local government, etc. Most of this information isn't making it to the top and it isn't being captured in the written reports. It's partly a matter of making the ANICOs' contribution more visible. We need a complete report more frequently and more field visits and observations of what ANICOs are doing. RDB staff should be collecting and compiling this information—this could perhaps come out of meetings with community conservation wardens.

RDB staff member

As the RDB staff member above makes clear, the ANICO program's value is not sufficiently visible to upper level public officials.

Recommendation(8): The RDB staff member's suggestion above links nicely with our main recommendation in the previous section: Regular, one-on-one meetings between RDB or WCS staff and ANICOs would not only boost morale and make ANICOs feel less isolated, but it would also provide an opportunity for staff members to collect detailed, in-depth accounts of what the ANICO has been doing and what changes he or she has brought to the community. This information will be vital in the long term, when it comes time to persuade government of the value and impact of the ANICO program. Thorough data collection now could help secure the program's sustainability down the road.

5. Defining and Measuring Success

We were asked to consider two main questions regarding the effectiveness of the ANICO program: What would it mean for the ANICO program to be successful? And what criteria might we use to measure this success? To address these questions, we now return to the four key areas of responsibility mapped in section 3. At the end of each sub-section, we also include recommendations and further observations that might help improve the ANICOs' effectiveness.

A. Reporting Illegal Activities

The ultimate goal, in this area, is to protect the park by reducing the amount of illegal activity in it. ANICOs serve two primary functions in advancing this goal: (1) they transmit information to park management about illegal activities in their area, thus serving as the “eyes and ears” of park staff in their communities; (2) they deter illegal activity by threatening to report it and by educating communities about the laws protecting the park

and the penalties associated with illegal behavior. Several ANICOs described changes in the behavior of illegal actors since they started their work: whereas people once went into the park at any time of day, they now go in only at night, in secret.

In order to measure the effectiveness of ANICOs in this area, managers should first evaluate the frequency and quality of each ANICO's reports of illegal activity. These are typically telephone reports, called in initially to the community conservation wardens. High-quality reports are reports that are useful to law enforcement and lead to arrests or to the discovery of damaged sites in the forest. In order to evaluate these reports and observe trends, records must be kept every time a new report is called in.

Simply assessing the frequency and quality of ANICO reports is not enough, however. In areas where threats to the park have already been reduced, infrequent reports might be evidence of success, not failure. So the frequency and quality of ANICO reports should be assessed alongside existing data about illegal activity in the park. These data are already being collected through ranger-based monitoring and other sources, including local police, trackers, and guides (for instance, we heard from one guide that recent tree-cutting in Cyamudongo forest is threatening the integrity of the chimpanzee habitat). In areas in which threats to the park have been recently documented, ANICOs should be submitting frequent, high-quality reports. If they are not doing so, they should be considered ineffective.

One further complication should be kept in mind: some of the ANICOs' reports of illegal activity are never transmitted to the law enforcement warden. Some cases of suspected illegal activity are handled by the ANICO and the cell executive secretary themselves—they are not reported to RDB. Some cell executive secretaries told us that they only involve RDB when they cannot resolve the situation themselves. We also heard from ANICOs that they often warn illegal actors and try to persuade them to stop before reporting them to RDB. Some ANICOs will report illegal actors to RDB only after the second or third offence. This complication should reinforce our earlier observation that some of the ANICOs' work is not currently visible to managers.

Recommendations:

Recommendation(9): The law enforcement warden and other RDB staff members told us that ANICOs would be more effective if they collaborated more closely with park rangers on the ground (instead of waiting for their reports to filter from the community conservation wardens to the law enforcement warden and then back down to the rangers). Working more closely with rangers might also enable ANICOs to receive immediate feedback about the quality of their reports. This seems to us a promising idea; it may be worth investing in a joint training session for rangers and ANICOs to jump-start this collaboration.

Recommendation(10): It is sometimes difficult for ANICOs to travel regularly to other villages, especially when these are far away from their homes. Some staff members have expressed concern that ANICOs concentrate their efforts mainly in their own villages and do not often travel to the other villages that border the park in their cell. With these facts in mind, it may be worthwhile to appoint more than one ANICO in some cells. Some cells have much longer boundaries with the park than others, and the villages that are far from the ANICO may not be getting regular attention. This recommendation was also suggested by an executive secretary.

Recommendation(11): Previous reports on the ANICO system have stressed the need to share results of ranger-based monitoring with the ANICOs, so they have the latest information on the threats to the park in their area.

In order to make frequent telephone reports of illegal activity, ANICOs need steady airtime (see **Recommendation(5)**). Lack of paid airtime was a concern often cited by the ANICOs we interviewed.

Further observations:

- One cell secretary suggested ANICOs be trained in investigative techniques: how to collect information about illegal activities, how to cultivate a network of informants, how to conduct interviews, etc.

B. Educating Communities

The long-term goal of this area is to change community attitudes over time, thereby building support for conservation and reducing the threats to the park. In the short term, it is difficult to see tangible effects of education (since education is typically a gradual process), but there are ways to monitor both the quantity and quality of the ANICOs' efforts in this area.

As we mentioned at the beginning of the report, most ANICOs report two main activities related to education: (1) speaking about conservation at community-wide meetings, and (2) meeting individually or in small groups with suspected illegal actors. To evaluate ANICO performance, WCS/RDB managers could record how often each ANICO organizes or attends these meetings. To better judge the quality of each ANICO's contributions in this area, managers could also attend a meeting where the ANICO is scheduled to speak and/or interview cell executive secretaries or other officials who attend these meetings. A great deal can be learned through in-person observations: Is the ANICO an effective speaker (i.e., when he or she speaks, are community members paying attention?)? Is the information delivered accurate and well-chosen?

WCS/RDB can also collect information about the effectiveness of community education by informally interviewing some community members to gauge their knowledge about the park: can they speak to the value of Nyungwe? Are they aware of the uses of revenue-sharing funds in their district? Are they aware of the laws protecting the park? And finally, have they seen any evidence that illegal actors have stopped their illegal activities after the ANICO's interventions?

Finally, public attitudes in cells bordering Nyungwe could be compared with public attitudes in cells not bordering the park, where no ANICO exists. One executive secretary who had worked in several cells reported that he thought public attitudes in his current cell (bordering the park) were substantially more favorable to conservation, in large part because of the education work of the ANICO and other local officials. This is not, of course a perfect measure of the ANICOs' effectiveness, since other actors (conservation NGOs, local officials) are also likely to be more active in delivering conservation messages in cells bordering the park.

Further observations

- The ANICOs' education mission is related to their law enforcement mission. As we explained earlier, ANICOs rely on informants to generate information about illegal activities in the park. Some ANICOs we interviewed explained that informants are often people who have benefited from conservation in some way or who have come to believe in the value of conservation. Therefore, ANICOs' capacity to report illegal activity effectively depends partly on their success in educating communities about the value of the park.
- Several ANICOs told us that they would benefit from more opportunities to visit Nyungwe, to learn more about the park's biodiversity, and to better understand and appreciate its value. Indeed, it seems important to us that these spokespersons for conservation have strong, firsthand knowledge of what they are talking about.

C. Mediating Conflicts

Human-wildlife conflict (i.e., crop raiding by wild animals) can exaggerate local resentment of conservation, thereby impeding the long-term goal of improving relations between communities and the park. It is therefore important to ensure that cases of crop raiding are addressed in a consistent, fair, and timely manner by park officials. ANICOs assist in this process by reporting cases of crop raiding to park officials and often by being the first on the scene (sometimes accompanied by the cell executive secretary) to assess the damage and talk with the farmer whose crops have been damaged. In some cases, they also work with farmers to help them protect their crops from future raids. Since the new national compensation law was ratified, ANICOs have also been helping farmers whose crops have been damaged to fill out the forms required to apply for government compensation.

For the ANICO to be effective in these areas, it must be widely known in the community that the ANICO should be notified of cases of crop raiding. If this information is not widely known, many cases of conflict are

likely to go unreported. ANICOs should also make consistent and timely reports to RDB when they receive information about crop raiding. ANICOs should possess accurate information about effective strategies for crop protection. And they should be capable of filling out compensation forms appropriately.

To measure an ANICO's effectiveness in these activities, WCS/RDB could speak with the cell executive secretary and also with people whose crops have been damaged, to get a sense of whether people are satisfied with how the ANICO has handled cases of crop raiding, and to evaluate the strategies the ANICO has conveyed to farmers about crop protection. WCS/RDB could also speak with farmers who own property adjoining the park, to make sure they understand that the ANICO can help them when their crops are damaged by animals. And WCS/RDB could ask for copies of the ANICO's compensation forms, to ensure that they are adequate. As was the case with the reporting of illegal activities, it is possible that some cases of crop raiding are handled solely by the ANICO and the executive secretary, and are never reported to the park. If this is indeed the case, the number of crop raiding incidents and the ANICOs' work in this area are currently underreported.

Further observations and recommendations:

- There is some disagreement about what exactly the ANICOs' role should be relative to human-wildlife conflict. Many ANICOs believe they are responsible for visiting the site of the damage, "calming down" the farmer, helping farmers fill out forms for possible future compensation, and talking to communities about strategies for protecting their crops in the future. The chief park warden and the law enforcement warden, however, told us that the ANICOs' role is to immediately report damage to park staff and to educate communities about the compensation law and about how best to protect their crops. They said ANICOs should not visit the scene of crop damage on their own, but should wait to go with the official group of RDB staff and police.
- If ANICOs are and will continue to be the first people on the scene, however, RDB may want to make sure it has communicated clearly with the ANICOs about what messages it would like delivered to the farmers. For instance, it is important that the ANICO does not create unrealistic expectations about the compensation policy—expectations that, if unfulfilled, may lead to greater resentment of the park in the future.
- In any context, the implementation of compensation policies can be very delicate. The designers of the policy have to be careful that compensation does not create perverse incentives (i.e., that it is designed in such a way that will not encourage people to be more careless in guarding their crops or otherwise deliberately exploit the policy). In addition, it is very important that the policy works consistently, fairly and in a timely manner, or it might actually increase resentment toward conservation. (For example, we have read about a government compensation policy in India in which, after farmers took the time and effort to file a complaint, it could take weeks or even months for an official to come and investigate the site, by which time all evidence of the damage would be gone.) We do not have many details about the new compensation policy for Nyungwe, so our comments here are somewhat speculative, but we have heard several things that give cause for concern about the policy's applicability in this context. First, we have heard that this policy was designed for Akagera, where large animals (elephants and cape buffalo) cause severe damage to crops and even take human lives. In Nyungwe, however, we have been told that most damage is relatively small, caused by baboons or vervet monkeys. One ANICO told us that most of the damage in her area was valued under 20,000 Rwf, and that it is therefore not covered by the current compensation policy. We have also been told that damage caused by Vervet monkeys is also not covered under the policy.

Recommendation(12): If these reports are true (see above bullet point), and if many of the incidents of damage that occur around Nyungwe are therefore not covered under the compensation law, RDB may want to reconsider its strategy. We have been told that RDB has discontinued its own practice of paying modest "consolation" sums to farmers around Nyungwe whose crops have been destroyed by wild animals. If the national compensation law turns out to be either ineffective or inapplicable to most incidents at Nyungwe, RDB should strongly consider restarting its own consolation payments. Now that the compensation law has raised farmers' hopes, the failure to receive any payment will lead to frustration and resentment. This frustration may damage the ANICOs' reputations, since they now find themselves in the difficult position of "middle men" trying to facilitate the compensation process.

D. Creating Alternative Livelihoods

In almost all of our conversations about the conservation of Nyungwe, people have stressed the importance of alternative livelihoods. How can you expect people to stop harvesting resources from the park if no economic alternatives exist? The ultimate goal in this area is to reduce threats to the park by providing alternative sources of income to people who currently depend on the park for firewood, for bushmeat, or for other essentials.

ANICOs are trying to contribute to this goal in several ways. Most of the ANICOs we interviewed are working to group illegal users into cooperatives or savings schemes. Some are also writing funding proposals on behalf of these cooperatives, to attract support from revenue-sharing funds or other sources, and helping manage cooperatives that are up and running. Some have designed the new cooperatives themselves.

Evaluating the ANICOs' effectiveness in this area is complicated. First, the cooperative itself must be evaluated. In order to be successful (from the point of view of park conservation), a revenue-generating cooperative must achieve several goals:

- It must generate steady revenue for a reasonable number of participants.
- The revenue generated must be adequate to replace—or mostly replace—the revenue derived from illegal activity.
- The members who receive the revenue (and contribute to the cooperative's work) must be poor villagers who currently depend on the park's resources—so the cooperative must be targeted to reach the right people. If the cost of joining the cooperative is too high, for example, the poorest villagers will not be able to join.
- Steps must be taken to prevent cooperative members from continuing to exploit the park's resources illegally.

The information needed to evaluate cooperatives could be gathered through detailed conversations with cooperative members and by conducting audits of the cooperative's books.

Furthermore, the ANICO's own contribution to the cooperative must be evaluated. This could be accomplished by speaking to members of successful cooperatives to find out who is mostly responsible for the cooperative's success, and what the ANICO's role has been. An interview with the ANICO him- or herself may also prove useful: ANICOs who are deeply involved with successful cooperatives will be able to speak in detail about the cooperative's functioning. Data can also be collected about the number of cooperatives the ANICO has assisted, and the success rate and quality of the ANICO's funding proposals.

Our interviews have left us somewhat skeptical, however, about the ANICOs' capacity to be effective in this area. For more details about this, see our further observations below.

Further observations and recommendations:

After all of our conversations with ANICOs, cell secretaries, and staff, we still find it very difficult to explain how most cooperatives actually work or to judge their effectiveness. For example, one ANICO described a beekeeping cooperative with over 60 members, all of whom were once engaged in illegal activities. Yet, when we tried to dig for more information, we discovered that only a small fraction of the members were active beekeepers. We were unable to find out whether the other members were working or benefiting at all. In other cases, we discovered that the cooperatives ANICOs described to us have yet to receive an initial investment from RDB—so, illegal users have been grouped together, but they are not currently working—they are simply waiting for funding.

The difficulty we had in gathering precise information about these cooperatives made us skeptical about many of them. Moreover, as one RDB staff member warned, cooperatives that are poorly run may simply create false expectations that lead to disappointment and a return to illegal activities.

On the other hand, we were sometimes able to get detailed information suggesting that some cooperatives function successfully. For example, ANICOs and staff spoke positively about the trail-building cooperative in Banda, where ex-poachers are hired and paid to work on trails. Also, we were able to learn more details about the small savings associations that have started in some areas. For example, the ANICO in Buvungira helped illegal users to join a savings association. Each of the members contributes a small sum of money (maybe just

200 Rwf) at a time and then small loans are made available upon request. At the end of the year, the association's money is used to fund Christmas and New Year's celebrations (a time when many people would otherwise go into the park to supplement their incomes). The cell secretary in Buvungira spoke highly of this scheme. From our perspective, these savings schemes have a number of advantages: (1) they don't require external support from RDB or other funders, (2) they don't require a great deal of specialized training, and (3) they have the potential to benefit all members.

Several staff members in RDB and WCS told us that they could imagine expanding and deepening the ANICOs' involvement with the cooperatives. In addition to their work in helping to organize and bring members into the cooperatives and writing revenue-sharing proposals, the ANICOs could serve a greater advisory role to the cooperatives, helping provide the financial and the technical support that they need to succeed, or to secure this support from outside experts and trainers. ANICOs would monitor the cooperatives, detect problems before they become serious, and help find solutions.

The staff members who discussed this possibility also envisioned that some money, drawn from the cooperatives' revenues, could be set aside as a small salary or payment for the ANICOs. These staff members are well aware that many ANICOs are not currently qualified to fulfill the role envisioned above, and that a great deal of training and capacity-building would need to take place first. Some even say that if ANICOs become more involved, as managers or overseers, with the cooperatives, they will need to be offered a formal salary.

So, what skills do the ANICOs need to create alternative livelihoods successfully, and what skills do they need in order to be effective mentors and advisors to revenue-generating cooperatives, now and in the future? First, the ANICOs must be able to develop a sound idea for a revenue-generating scheme that is well adapted to the needs and capacities of his or her particular community—especially to the capacities of illegal actors in the community. Second, the ANICOs must be able to identify potential funding sources and write successful funding proposals. Third and most importantly, ANICOs would need to be skilled project managers, managing both people and money. And finally, they must be savvy enough to connect the cooperative with the outside technical expertise and assistance it needs to produce marketable products or services.

In our view, however, it is unrealistic to expect that most ANICOs will develop these skills without a very substantial investment in capacity building. We are convinced that creating alternative livelihoods is a critical component of effective, long-term conservation at Nyungwe. We also believe that many ANICOs might *want* to participate in the development of these alternative livelihoods, because this service helps balance their role in the community, so that they are seen as bringing concrete benefits to their fellow community members, not just threatening to report them to park officials. It is surely easier to approach an illegal actor and warn him or her not to enter the park if you are also able to offer that person an alternative. But we doubt that most ANICOs can learn to handle this role effectively through the occasional, brief training sessions that WCS currently offers. These concerns were echoed by two RDB staff members, including the chief park warden, who argued that creating alternative livelihoods should not be part of the ANICOs' mandate.

When we asked ANICOs what kinds of training they need to do their jobs better, many of them said they needed to develop skills in proposal writing and small project management. In our view, successful capacity-building in this area would require more than just one-off training sessions. It would require, for instance, the presence of permanent staff who are specialists in community development and who could do regular site-visits and follow-up with the cooperatives and the ANICOs who supervise them.

We also agree with the staff who said that ANICOs would need greater incentives to motivate them to work as project supervisors or extension officers.

The question, then, is whether WCS/RDB should take on the additional costs associated with additional capacity building and additional incentives. This is a question that we are not well-positioned to answer. We will, however, offer the following recommendations:

Recommendation(13): If WCS/RDB is unwilling to substantially increase its investment in capacity building, we recommend that the mandate for most ANICOs be narrowed to exclude creating alternative livelihoods, and that resources be focused on enabling ANICOs to perform well across a

narrower range of tasks. As we already pointed out, the principal value that ANICOs currently deliver to RDB come from their reports of illegal activity, and more can be done to improve ANICO performance in this area. Asking ANICOs to do too much with too few resources may lead to an overall decline in effectiveness. In short, given current constraints, resources should be invested only where they can be expected to have a real impact.

However, we think that the money currently used to train all ANICOs in proposal writing and project oversight could instead be devoted to a smaller, select group of ANICOs. Instead of stretching limited resources to try to make every ANICO a project manager and advisor for cooperatives, WCS/RDB could provide focused, ongoing training and support to a few, dedicated ANICOs who have shown the energy and capacity to be effective in this area, and who have good ideas for revenue-generating projects. (Though other ANICOs could still be involved in helping connect illegal users with existing cooperatives in their cells.) We feel more confident that funds invested in this way would deliver results.

Recommendation(14): However, if WCS/RDB is willing and able to substantially increase its investment in capacity building, we suggest that they consider hiring permanent community development staff who could be made responsible for the development of revenue-generating cooperatives and the provision of regular training and support to the ANICOs who work with them.

E. Concluding Thoughts About ANICOs' Effectiveness

We want to end with a two general thoughts about the effectiveness of the ANICO program.

First, we would like to return briefly to our primary recommendation in the Sustainability section (**Recommendation(3)**). In our view, one-on-one meetings between ANICO and WCS/RDB staff would also help make ANICOs more effective on the ground. Management could use these meetings to identify and solve problems that arise in ANICOs' work, to help prioritize responsibilities, and to jointly develop plans and strategies. They would offer valuable opportunities for on-the-ground supervision and support.

Second, two of the executive secretaries we spoke with requested that they be included in the ANICO trainings so that they can participate more effectively in conservation activities. This recommendation was also echoed by one RDB staff member. If sufficient funds are available, it may be worth considering this idea, as a way of reinforcing the ANICOs' relationship with local government and making executive secretaries feel more invested in the activity of conservation. If executive secretaries do not tend to stay in their positions for long, however, it may not be worth investing in them as long-term partners.



Looking Forward Through the Past

Progress, Challenges, and Lessons
Learned by WCS
in Nyungwe National Park, Rwanda
1988 - 2013

This publication was prepared by Bill Webber and produced for review by the United States Agency for International Development. July 2013.

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government

Introduction

The roots of the Wildlife Conservation Society in Rwanda spread both deep and wide across the landscape. From the Virungas in the north to Nyungwe in the south, with extensions into Gishwati, Mukura, Akagera, and across the borders into Congo, Uganda, and Burundi, WCS has worked with an array of local, national, and international partners to advance the cause of conservation. It has championed both charismatic species and the full range of biodiversity through pioneering interdisciplinary research and creative new approaches to addressing the needs of local communities and national development interests.

If WCS actions in Rwanda are widespread, they are most deeply and firmly rooted in the Nyungwe Forest. Among many WCS partners in Nyungwe over the years, two stand out above all others: the Rwanda Development Board and its predecessor ORTPN, for understanding the importance of conservation in national development and for steadily raising its standard of professionalism; and the US Agency for International Development for its early recognition of the importance of biodiversity and its timely intervention as a primary source of financial and technical support at two critical junctures.

This report is commissioned to help prepare for the celebration later this year of the 25th anniversary of the WCS/RDB/USAID collaboration in Nyungwe that officially began in 1988. That history – and the lessons learned from it – form the bulk of this document. However, this history would be incomplete without attention to activities that led up to the 1988 engagement and subsequent WCS activities outside of Nyungwe, both in the field and in ever-changing advisory roles. In addition to this text, an accompanying PowerPoint presentation has been provided to RDB, USAID, and WCS in electronic format.

Early History: 1959 - 1987

In 1959, George Schaller came to the Virunga volcanoes to conduct the first ever study of mountain gorillas in the wild. Supported by WCS (then known as the New York Zoological Society), Schaller stayed for 18 months, working primarily from a cabin at the base of Mt Mikeno in the Congo sector of what was then called the Albert National Park. Belgian colonial authorities did not permit him to cross legally into the Rwandan sector of the volcanoes because of “insecurity” concerns. However, Schaller made several unofficial forays into Rwanda to complete his census of the Virunga population.

Schaller’s work resulted in major contributions to the understanding and conservation of mountain gorillas. He provided the first science-based census/estimate of the population at 400 to 500 individuals. He described basic gorilla social structure and ecology in ways that still have value today. And he published two books – *The Year of the Gorilla* and *The Mountain Gorilla* – that

brought accurate information and strong arguments for improved conservation to both scientific and popular audiences around the world.

In 1967, Dian Fossey came to the Virungas to build on Schaller's work: in her own words, "to out-Schaller Schaller." WCS gave her one of her first grants, in 1967. Fossey's efforts focused on long-term studies of gorilla social organization and behavior and National Geographic magazine articles and films made her and her "gentle giants" global stars. However, just as the world came to know them as individuals, the survival of the gorilla population was increasingly in jeopardy. More than half of their forest habitat in Rwanda's Volcanoes National Park was cleared for settlement and agriculture following independence and a 1973 census showed their numbers to have crashed from Schaller's 450 to only 275.

In 1978, WCS funded a hybrid effort by Amy Vedder and Bill Weber to study the causes of the gorilla population decline and to recommend solutions to the problem. Their work included a new census, an 18-month study of the gorillas' habitat and food resource needs, and a first-ever study of Rwandan attitudes toward conservation and other socio-economic factors – a novel package of multi-disciplinary research that ultimately contributed to the emerging field of applied conservation science. At the time, its importance lay in its resulting recommendations. In addition to strengthening park security, these included education and outreach to local communities and development of a new kind of tourism focused on a few groups of gorillas. WCS presented these to ORTPN and external NGOs as an alternative to a proposal to take another 5000 ha, or one-third of the remaining park, for a cattle-raising project.

In the summer of 1979, the Mountain Gorilla Project was launched based on the core ideas of gorilla tourism, education, and improved park security. The initiative was funded by a consortium of NGOs: African Wildlife Foundation (AWF), Fauna and Flora international (FFI), and World Wildlife Fund (WWF). WCS did not participate, citing the organization's emphasis on conservation science – an error they would later acknowledge. Weber and Vedder stayed on to initiate the tourism and education programs with primary support from FFI and WWF. The MGP functioned for nearly 10 years, in collaboration with a relatively weak ORTPN. In 1990, the MGP was replaced by the International Gorilla Conservation Programme (IGCP), an NGO consortium that continues to provide technical assistance and funding for mountain gorilla efforts in Rwanda, Uganda, and DR Congo. Under RDB management, gorilla tourism now generates more than \$100 million dollars per year in direct and indirect revenue and is the flagship for Rwanda's booming tourism industry. Of even greater conservation importance, the Virunga mountain gorilla population stands at nearly 500 individuals: more than at any time in recorded history.

WCS remained involved in the Virunga region through the Ruhengeri Research and Analysis (RRAM) project, funded by USAID and directed by WCS Associate Weber from 1985 through 1988. RRAM's mandate was to bring together information – in Rwanda's first computerized GIS analysis – on the biological, physical, social and

economic resources of the Virunga watershed. This included mapping of the VNP vegetation zones and funding a new gorilla census. Based on the project's land use threats analyses, its second phase targeted erosion control through agroforestry. This novel effort was cut short by hostilities in northern Rwanda in the early 1990s, but for many within USAID, the project was a precursor to later Integrated Conservation and Development Projects (ICDPs).

Nyungwe Prelude: 1983 – 1987

In 1983, Weber and Vedder completed the USAID-funded management plan for the Bururi Forest Reserve in southern Burundi and came to Rwanda to discuss a new project in the Nyungwe Forest. Nyungwe was then a national forest under the Directorate General of Forests. Advised and supported by Swiss technical assistance, the DGF plan was to plant a buffer zone around the entire Nyungwe perimeter, then proceed to develop a multiple use master plan for the forest. As part of that plan, the DGF asked WCS to conduct surveys of Nyungwe's wildlife to identify a potential "nature reserve" within the 1,000 km² forest.

Following further reconnaissance and discussions, WCS provided funding for a three-year initiative led by Vedder: "Conservation of the Afromontane Forests of Rwanda, With Focus on the Nyungwe Forest Reserve." As indicated by the title, this project targeted activities in all of Rwanda's remaining mountain forests. A 1986 census of the Virungas that brought together teams from Rwanda, Congo and Uganda documented the first increase in mountain gorilla numbers since the creation of the MGP. A survey of golden monkeys (*Cercopithecus mitis kandti*), found this rare subspecies to be endemic to the Virungas, Gishwati, and Nyungwe. An assessment of the World Bank's "Agro-Sylvo-Pastoral Project" in Gishwati found systemic mismanagement and severe ecological degradation and reported this finding to the DGF, as well as to World Bank offices in Kigali and Washington.

The primary focus of the 1985-88 effort was on Nyungwe. Major vegetation zones and their principal tree species were identified and faunal surveys showed a diverse primate community with 10 diurnal and 3 nocturnal species. Among these was the discovery of the owl-faced Monkey (*C. hamlyni*) in Nyungwe's southern bamboo zone – the only known population of this species east of the Great Lakes rift.



Black-and-white Colobus
Credit: Vedder/Weber



Owl-faced Monkey
Credit: WCS

In a further, more focused study, Vedder also documented the presence of *Colobus angolensis ruwenzorii* in permanent groups of 300 to 400 individuals – associations nearly 10 times the size of other known black-and-white colobus populations. At the same time, the forest's terrestrial mammal populations were found to be severely depleted, with Cape buffalo extinct and leopards, elephants and several others on the brink. This finding was closely linked with a preliminary threats analysis that revealed extensive highly destructive gold mining, with related heavy poaching, as well as widespread woodcutting and intensive bamboo exploitation in the Nshili region. The nature of these threats was brought to the attention of Rwandan authorities.



Gold mining in Bururi Valley, Nyungwe (1986)
Credit: Vedder/Weber

In late 1987, the combination of serious threats to wildlife with potential benefits from primate and other tourism attractions convinced ORTPN to intervene in Nyungwe. At the same time, a WCS proposal to the Biological Diversity Program of USAID was working its way through Washington offices, with the endorsement of the USAID Rwanda mission. A powerful new partnership was about to be born.

1988 – 1993: PCFN

The Projet Conservation de la Foret de Nyungwe (PCFN) was launched in 1988. With renewed funding from WCS, a new grant from USAID, and the arrival of the first ORTPN staff (a warden and small team of guards), a period of more intensive conservation began. Nyungwe was still a Forest Reserve with four major international donors (Swiss, World Bank, European Development Fund, and the French) supporting exotic tree plantations around its border and advising the DGF on forest management. However, WCS and its partners were playing an increasingly visible role. It was also a time of more significant Rwandan involvement, with Eugene Rutagarama serving as the official counterpart to WCS's Rob Clausen from 1988 to 1990.

Research was less important for WCS during this phase, with the notable exception of a series of studies examining the socio-economic status of neighboring human communities and their relationship with the forest. Two of these studies surveyed the economics of gold mining (Kristenson & Turikunkiko) and bamboo exploitation (Bahigiki & Vedder). Results of these and other surveys that showed a high dependency on natural forest products (wood, bamboo, honey, medicinal plants) informed a new Five-Year Management Plan of the Congo-Nile Divide, developed by the DGF and its foreign advisors. Other in-forest studies were conducted on an ad hoc basis. These included two studies of the Nyungwe bird fauna: one by a team from the University of Wisconsin, led by Tim Moermond; the other led by Samuel Kanyamibwa from the National University of Rwanda. Both projects provided learning opportunities for NUR students, including Fidel Ruzigandekwe, who would later become Executive Director of ORTPN's Rwanda Wildlife Agency and then WCS Monitoring and Evaluation Manager.



Illegal bamboo harvesting in NNP near Nshili
Credit: Vedder/Weber

PCFN placed a primary emphasis on tourism development. With support from USAID and Peace Corps, the project laid out the network of trails leading from Uwinka that still serves as the tourism core today. WCS hired and trained guides to take visitors to see colobus, other monkeys, and birds, as well as to hike the trails. Most of these early guides and trackers were from the Banda region, from where they “commuted” on foot to the main tourist center at Uwinka. By 1990, Nyungwe hosted nearly 3,000 visitors per year, most of whom were international tourists. It should be noted that this number was bolstered by visitors traveling to Kahuzi-Biega NP, in DRC, who preferred the roads – and security – of Rwanda. As perceptions of the security situation in Rwanda worsened in the early 1990s, international tourism declined.

One of ORTPN’s major acts during this time was the closure of the Pindura and Karamba settlements within the Forest Reserve. Pindura, located in the heart of the forest at the juncture of the road south to Bweyeye and Burundi, was both an eyesore for tourists and the hub of numerous illegal activities linked with gold mining. Both settlements were illegal, under Rwanda’s Forest Reserve statutes. But where the DGF had been reluctant to act, ORTPN ordered them vacated and demolished. This didn’t end mining, but it made most supply operations more difficult and costly.



Pindura Settlement and Trading Center (1988)
Credit: Vedder/Weber

An extension and expansion of USAID support in the early 1990s permitted the construction of the current housing, offices, and visitor support infrastructure at Gisakura, on the western edge of Nyungwe. These were intended to provide living

and work facilities for ORTPN and WCS staff, as well as for visiting scientists. The dormitory and canteen complex was designed for students and other training events. In a parallel, but unrelated action, the World Bank supported construction of the Kitabi building complex that now houses RDB offices and the Kitabi College of Conservation and Environmental Management. Today, the buildings used by RDB rangers at Gisovu are those which were constructed in the 80s by the Swiss Forestry Project.

A final activity of the initial PCFN period received little attention at the time, but proved to be an important catalyst for conservation activity across the Great Lakes region. Under the initial USAID Biodiversity grant, WCS organized and hosted three Afromontane Forest Conservation workshops. These brought together people from Rwanda, Burundi, Tanzania, DRC, and Uganda to discuss common challenges and successes in mountain forest conservation. In addition to shared experiences in gorilla, chimpanzee, and general forest tourism, these meetings generated recommendations to conduct more biodiversity surveys and applied research across multiple sites. They also generated recognition of the need to move beyond the situation where projects were working in isolation, to a regional perspective that saw a network of forested “islands” with a shared set of attributes, opportunities, and challenges. This was the beginning of what would become the Albertine Rift regional conservation initiative. According to Eugene Rutagarama, these meetings also contributed ideas of transboundary collaboration that would inform the creation of the International Gorilla Conservation Programme and, much later, the Nyungwe-Kibira transboundary initiative.

1994

The Genocide of 1994 affected Nyungwe in many ways. Tens of thousands of Tutsi were slaughtered at Murambi to the east of the forest. The French declaration of their “Zone Turquoise” made the forest a temporary haven and primary escape route for hundreds of thousands – including hardened *interahamwe*, defeated military units, and countless others swept up in the mass exodus – fleeing to Congo. The day after hostilities formally ended, the ORTPN warden Shaban Turikunkiko was murdered while driving across the main forest road. All buildings at Uwinka were destroyed and those at Kitabi and Gisakura were looted and heavily damaged. RPF units patrolled the forest for national security, not anti-poaching, purposes. Tourism would take years to recover.

1995-2002

The initial years following the Genocide constituted a grim period for Nyungwe and the nation. The new government needed to provide security for its people, resettle waves of returnees, rebuild its infrastructure, and replenish a depleted treasury. Conservation was not a priority and tourists would not return any time soon. Under

terms of the 1993 Arusha Accord, returnees were to be settled on “unoccupied” land, with the result that more than 60% of the Akagera NP was degazetted for returnees and their cattle. What was left of the Gishwati Forest Reserve after the World Bank Agro-Sylo-Pastoral project was cleared of all but a dozen square kilometers of relic natural forest – and some eyes looked covetously at Nyungwe for still more land. Donors, too, recognized that Rwanda had other priorities and applied their funding to political stabilization, justice, economic recovery, and ethnic reconciliation.

Under these conditions, WCS was left to cover virtually all costs associated with Nyungwe Forest conservation for many years. While such institutional support was essential at that time, success would not have been possible without a strong leadership team composed entirely of Rwandan nationals:

- Eugene Rutagarama, PCFN Director 1995-97
- Michel Masozera, PCFN Deputy Director 1996; Director 1997-2000; WCS Country Director 2003-2005, 2010-present
- Nsengiumva Barakabuye: PCFN Community Outreach Coordinator 1999-2004; PCFN Director 2005; WCS Country Director 2006-2009
- Ian Munanura: PCFN Director 2001-2004
- Felix Mulindahabi: PCFN Research & Monitoring Officer/Coordinator 1993-present

In addition, several dozen guards, trackers, and forest monitors were on the WCS payroll. With only limited oversight from WCS-NY staff and no functional park service, this group of Rwandans organized themselves to first secure the boundary, then slowly improve conservation in and around, the forest. When Amy Vedder arrived from WCS-NY to assess the situation in early 1995, patrols were already active in the park and primate groups were again being monitored.

Beyond re-establishing a presence, a top priority was to raise the awareness of central and local government leaders of Nyungwe’s conservation importance. Local leaders were especially important, as none of the international funders returned to support work in the buffer zone, or anywhere else in the forest. Poaching was rampant and many local farmers had cleared land within the protected area to plant fields. Once discovered, these farmers were allowed to harvest their current season and then required to leave. Poachers, too, were put on notice through their community leaders, that patrols were again being carried out and that anti-hunting laws would be enforced. Coordination with the Rwandan military patrols in and around the forest was essential. Ultimately, it was the military that forced major mining operations for gold and coltan to cease operations in 1999-2000.

In 1999, WCS hired Nsengiumva Barakabuye as Community Conservation Specialist. For the next five years, he and his teams reached out to district, school, and church leaders to raise their conservation awareness and provide information about the forest and its values. Beekeeping activities were initiated that included training to

reduce the potential for fires resulting from traditional honey harvesting techniques – fires that burned nearly 10% of the forest in the late 1990s and early 2000s. Improved wood-burning stoves were introduced in the Bweyeye region and the PNPT tourism cooperative was launched in Banda. The concept of *Animateurs de la Conservation* – ANICOs – was conceived and first tested in Nyungwe. It was a time of creative thinking and innovation in community conservation, but there were insufficient resources to do more than develop pilot initiatives at a scale much smaller than required by the large population beyond Nyungwe’s boundaries. Still, another innovative activity took local leaders to visit the devastated landscape that was once the 280 km² Gishwati Forest. The message was clear: it is far better to live with the natural forest than to live with the consequences of tearing it down.

In 1999, the first donor support from other than WCS began to flow into Nyungwe. Dutch technical assistance paid for the construction of ranger posts and equipment for mobile patrols. UNDP and the US Department of State paid, respectively, to rehabilitate the Gisakura and Kitabi building complexes. Partners in Conservation (Columbus Zoo, US) gave direct support to the women’s handicraft cooperative in Banda. And the MacArthur Foundation (US) gave a major grant to the newly created Albertine Rift program to support biodiversity and socio-economic surveys in and around the region’s mountain forests, including Nyungwe. The results of the biodiversity surveys confirmed Nyungwe as one of the most important forests for conservation in Africa.

2003 – Present

Throughout the preceding period, ORTPN gradually added capacity. Then in 2003, with a significant tourism recovery underway in the Volcanoes, ORTPN returned to Nyungwe in a major way, bolstered by reorganization and the inclusion of conservation objectives in Rwanda’s new Constitution and Vision 2020. New deputy warden positions were added for community outreach, tourism, and research and monitoring, in addition to law enforcement. Higher education standards were established for guides and guards. Most significantly, the park service took on the responsibility of paying the salaries for all of these positions – for the first time in 10 years – leaving only tourism trackers as ORTPN staff on the WCS payroll.

2005 was a watershed year for Nyungwe. Years of preparatory work led by Michel Masozera and his team resulted in the official designation of Nyungwe as Rwanda’s third national park. Boundaries were marked by teams using GPS as they walked the perimeter of the forest – leaving the buffer zone still in Forest Department hands. That same year, WCS contributed significantly to ORTPN’s first Five-Year Management Plan (2006 – 2010) for Nyungwe National Park – a landmark document that set ambitious goals for the new protected area, especially for the tourism sector.

Recent years have seen the return of major donors to Nyungwe. Without ignoring the primary importance of health, education, and agriculture that continued to receive the major share of funding, a few international agencies took renewed leadership roles in biodiversity conservation and its link with rural development in communities around protected areas. The largest single grant, \$5.5 million, came from UNDP's Global Environment Facility, in response to a proposal developed by WCS in close collaboration with ORTPN and many other government (REMA, MINITERE, NUR), NGO (IGCP, MGVP, DFGF, HELPAGE, and others), and civil society partners. This Protected Areas Biodiversity (PAB) project targeted the Nyungwe and Volcanoes parks, as well as central ORTPN capacity building. For internal government reasons, it was managed by the Rwanda Environmental Management Authority. For direct support to WCS, its community and tourism partners DAI and IRG, and the Nyungwe NP, however, USAID has provided the primary support, totaling more than \$11 million over the past seven years.

WCS's lead government partner throughout the past quarter century has also undergone significant change in recent years. In 2008, the functions and staff of the former ORTPN were incorporated into the Rwanda Development Board. RDB's mission is *Fast tracking economic development in Rwanda by enabling private sector growth*. This is an essential mission for development in Rwanda and one that easily encompasses many aspects of ecotourism. Unlike most other private businesses under the RDB umbrella, however, national parks have significant management costs related to security (anti-poaching, encroachment, transboundary locations) and challenging relationships with local communities due to real and potential conflicts between wildlife and domesticated crops and livestock. These management concerns have thus far been addressed by maintaining a Tourism and Conservation unit within the larger RDB. Discussions continue, however, as to the right-placing of conservation and the degree to which private sector interests will predominate in the overall management of Rwanda's national parks.

With increased support and greater staff capacity within WCS, RDB, and most partners, dozens of discrete activities have been initiated, many of which continue to evolve and adapt to changing needs and conditions. Assigning responsibility or credit for these activities is complicated by multiple and often overlapping donor and partner relationships. A GEF activity such as assisted regeneration of burned areas may receive PAB funds for local cooperatives, while WCS and USAID support the staff positions that oversee this project. RDB staff have increasingly taken on former WCS responsibilities in areas such as chimpanzee tracking and, most recently, ranger-based monitoring (RBM). USAID activities implemented by private sector partners IRG and DAI have drawn on WCS and RDB staff experience and knowledge to inform their enterprise and tourism activities funded by USAID. While this creates a complicated set of relationships, much has been accomplished in recent years.

With history merging into current events, and with current activities well documented in recent reports and evaluations, this narrative will now change form.

In keeping with document guidelines, the concluding sections will focus on 8 core areas of WCS activity, noting key activities with an emphasis on lessons learned over the past 25 years through present times.

1. Park Management and Institutional Support

WCS has a strong record of support, guidance, and transfer of core functions in its relationship with RDB (including ORTPN) and management of Nyungwe National Park. From 1988 on, this partnership has grown from one heavily dependent on WCS expertise, through an extended period of post-genocide financial and technical dependency, to a decade of steadily increasing RDB assertion of its proper primary role. From its very capable Chief Warden, through its deputy wardens, guides, guards, and trackers, RDB has consistently and competently taken over activities initiated by WCS. In the case of guides and guards, RDB has also raised educational standards and provided further training for its employees. In some instances where official RDB procurement is deemed too slow or uncertain with regard to quality, WCS continues to procure certain products for NNP use; however, this service is deemed by all to be less necessary than in years past.

The most current example of Ranger-Based Monitoring is illustrative. Begun more than a decade ago, RBM was initially run entirely by WCS staff and results were computerized and analyzed using the MIST program developed largely by WCS Albertine regional staff. In recent years, RDB rangers have taken on all data collection and entry responsibilities, with hands-on training by WCS. RBM patrols are on course to reach the 90% coverage milestone this year. As of mid-2013, USAID funding will support the transfer of all data analysis and mapping functions to the deputy warden for research and monitoring, with WCS providing continued mentoring as long as needed.

WCS staff played central roles in promoting the idea of making Nyungwe a national park and assisted in all stages, from boundary demarcation to enabling legislation. WCS national and international staff have also participated directly in the development of the 2006-2010 and 2010-2020 NNP Management plans. RDB has now taken the lead in driving this planning process and, in 2010, the two groups coordinated their planning so that priority activities could be matched, where possible.

Beyond Nyungwe, WCS has provided support to the Akagera NP on a per need basis for an elephant population survey and for an assessment of disease transmission concerns between domestic and wild animals. WCS also conducted the biodiversity surveys of Gishwati and Mukura Forests, including recommendations for their improved conservation. In the policy arena, WCS has generated recommendations to RDB for wildlife damage compensation systems, co-management of the Nyungwe buffer zone, and improvements to the draft national forestry law. These forays into policy formulation seem to have had less evident impacts than more direct park

management recommendations, likely due to the fact that national policies are subject to more diverse influences as they move through the political process.

Lessons Learned:

- WCS could secure a certain level of park and wildlife protection and fulfill certain tourism management functions during the post-genocide period of government preoccupation with bigger problems. However, only with RDB's national standing, expanded capacity – and reliable infusions of internal and external funding – could park management and protection operations be taken to a higher, essential level.
- WCS been a reliable partner, valued by RDB, when asked to provide conservation science and management guidance for protected areas beyond Nyungwe. Policy advice has also been solicited, though its impact is less certain.

2. Capacity Building

Capacity building has been an area of considerable and continued WCS success in Nyungwe. Rwandan staff at all levels have received hands-on training and been given leadership responsibility since PCFN's creation. This local leadership capacity was of absolutely critical importance in the post-genocide period, when Nyungwe's future – and even its continued existence – was in question. More recently, the project's senior national staff have earned or nearly completed Rwanda's only doctorate in conservation science, as well as three Masters degrees from the US and UK, and a Wildlife Management degree from Tanzania – all with primary WCS support. Almost all of these individuals continue to work with WCS, providing a unique combination of professional training, work experience, and continuity.

Other Rwandans have gained valuable experience in projects that have collaborated with PCFN, then moved on to other important conservation positions, including Dr. Sam Kanyamibwa (Executive Director, ARCOS) and Eugene Rutagarama (IGCP) and Fidel Ruzigandekwe (ORTPN, WCS), as mentioned above. As undergraduate and Masters students from NUR and other institutions continue to conduct research and receive guidance from WCS personnel in Nyungwe, this list will only grow. All of these individuals with Nyungwe experience are exposed to a great diversity of research, management, and community issues, providing Rwanda with a pool of adaptable conservationists.

Guides, guards, rangers, and trackers have also received considerable hands-on training from WCS staff, most critically during the post-genocide period. As RDB has taken responsibility for these positions since 2003, WCS has continued to mentor park staff. With increased donor support in recent years, site visits to Ugandan gorilla and chimp projects have been organized and guided by WCS. These have included central office RDB staff.

No advanced degree university training has been provided through WCS to RDB senior staff over the years. However, a high-level delegation from ORTPN, REMA, PAB, HELPAGE and WCS was funded by GEF to visit Costa Rica to study that country's national parks and tourism operations. This experience directly contributed to Rwanda's development of its Biodiversity and Wildlife policy, as well as a request for USAID support for the Nyungwe Canopy Walk.

Lessons Learned:

- The development of Rwandan professional conservation capacity at multiple levels was of central importance in managing Nyungwe during the post-genocide period.
- WCS support for continued advanced training and higher education for senior staff has resulted in strong institutional bonds and identity, with resultant continuity.
- Hands-on training and field experience cannot compensate for education standards required for RDB hiring. This has held back many local WCS field staff who would like to work as RDB guides or guards; it has also motivated some to return to school to obtain the required degree.

3. Research

Applied conservation science has been a regular, if inconsistent, aspect of WCS work in Nyungwe. Primate surveys and more focused research on colobus monkeys provided key information for the designation of the initial "Nature Reserve" and early tourism efforts. Biodiversity surveys in the late 1990s and early 2000s earned recognition of Nyungwe as a site of global conservation importance. The chimpanzee censuses of 2004 and 2007, led by Beth Kaplin and WCS staff, found a total of 400 chimps – with perhaps another 200 in Burundi's contiguous Kibira NP – adding Nyungwe to the list of key sites for conservation of that charismatic species. Long-term phenological monitoring and annual bird and mammal surveys may be less glamorous, but the results of the latter are essential to RDB's ability to assess conservation success. And Nyungwe's long-term phenology records may provide a much-needed baseline to detect and assess the effects of climate change.

Social science has never received as much attention as biological research in conservation. As the field has come to recognize the importance of social and economic factors, however, Nyungwe has been recognized for early attention to these subjects. Published articles from the 1980s described local attitudes toward the forest and its resources – mostly negative – while a recent WCS education survey found high awareness of park values and rules, as well as continued perceived need for forest resources. On-going masters research (Barakabuye) should provide more nuanced information on some of these issues. The most detailed and potentially important research to-date is that of Michel Masozera on

the value of Nyungwe's ecosystem services – water, tourism, erosion control, and carbon sequestration. Translating his findings and recommendations re payments for these ecosystem services into action – and real money – is a critical next step.

Lessons Learned:

- Research, both punctual (e.g. chimp census) and long-term (phenology, annual mammal and bird surveys), has provided sound information on which WCS and RDB can base management and resource allocation decisions. Timely analysis and distribution are necessary if this information is to serve its full potential.
- Social science research in Nyungwe is not new, but will become more important as the focus for conservation action moves to communities outside the park. Understanding the socio-economics of hunting and mining is especially important. So, too, is regular monitoring of tourist interests and satisfaction, if quality standards are to be steadily improved.
- There is an apparent decline in interest on the part of wildlife scientists to establish research projects in Nyungwe. Whether this is due to a lack of donor support, or the perceived high cost of working in Nyungwe, the result is the same: there is less information being generated and there are fewer sources of expertise to help inform and mentor park guides and other staff on key wildlife issues such as chimp and primate tourism, species recovery, and species-habitat relationships.

4. Tourism

With the arrival of RDB staff and support from the first USAID grant, ecotourism activities were initiated in Nyungwe in 1988. Monkey groups were habituated, trails blazed, local guides trained, and primitive infrastructure established. It is over the past decade, however, that tourism has begun to take off in both visitor numbers and quality of their experience. WCS has been a strong advocate for and supporter of this development. However, with RDB's increased engagement in this sector, the return of significant donors such as USAID and UNDP/GEF, and the resultant involvement of consultant groups and more private sector actors, determining responsibility – and credit – for specific activities is more complicated than before.

Chimpanzee visits have emerged as the flagship tourism activity in Nyungwe, with visitor numbers more than doubling from 859 in 2009 to 1,954 in 2012. The quality of visits has also increased significantly over this time, based on personal experience and reports of others, though the required effort and uncertainty of success remain higher for chimps than for gorillas. Guide knowledge of the chimps and their ability to keep visitors engaged during sometimes extended tracking lags well behind their gorilla guide counterparts. Responsibility for improving this situation has been divided in recent years, with the transfer of guides and most trackers to RDB and the allocation of donor funds for chimpanzee tourism to other organizations. The

engagement of an experienced chimp researcher as WCS Nyungwe Director, the part-time contribution of expertise from the Jane Goodall Institute through DAI, and improved communication among partners should help to clarify responsibilities. The presence of a long-term chimpanzee research program in Nyungwe would greatly enhance prospects for guide and tracker training.

WCS's original conception of ecotourism development in Nyungwe focused less on chimps and placed greater emphasis on hiking, watching monkeys and birds, and experiencing the rainforest. Such general tourism has also increased in recent years, rising to a high of roughly 8,200 total visitors¹ in 2011, before falling slightly to 7,700 in 2012. The potential for steady increases in such non-chimp-focused visitation has grown with USAID investments in new and improved trails, the canopy walk, and the WCS-designed Uwinka information and reception center. A revised pricing policy, now under final RDB review, should further facilitate this growth.



Uwinka information center, Nyungwe NP
Credit: Vedder/Weber

The Nyungwe Forest Lodge (for which WCS hired the original design team and helped to select the stunning Gisakura site) is a welcome and increasingly successful addition to lodging options in and around Nyungwe. It blends extremely well with its environment while responding to RDB policy emphasizing high-end ecotourism. WCS has divested itself of the Gisakura Guesthouse, which now operates as a private concession that continues to serve more modest budgets. New developments based

¹ RDB continues to collect tourism information in a manner that appears both difficult to access (as highlighted in a recent USAID evaluation) and to interpret. When figures are available, the number of “visitors” is used interchangeably with the number of “visits” to Nyungwe attractions (chimps, birds, trails, etc.). Both numbers are important (visits for allocation of guides, identification of desirable new attractions; visitors to generate essential data on lodging and rental vehicle needs, as well as reliable multiplier factors for spending per ecotourist outside of parks) and this unnecessary confusion should be cleared up by RDB.

on the recently approved national concessions policy, developed by RDB with DAI and USAID support, should further diversify the range of Nyungwe lodging offerings.

Lessons Learned:

- WCS is not a tourism development NGO. However, WCS has provided and should continue to provide sound advice and timely technical assistance to ecologically and socially sustainable tourism development efforts.
- Nyungwe is not the Volcanoes NP and chimps are not gorillas. Nyungwe offers many more potential attractions than the VNP, and many more challenges. WCS, RDB, and their major donors and partners have learned much about tourism in Nyungwe over the past decade. Putting that experience to work through the development of quality attractions, products, and services, along with adaptive policies on concessions, pricing, and marketing, should make the coming decade one of steady, sustainable growth.
- Investment in improved monitoring and sharing of visitor numbers, international or national origins, interests, spending, and satisfaction would be extremely helpful in planning and marketing for tourism in Nyungwe.

5. Outreach and Education

The recent USAID evaluation highlighted outreach and education as areas of mostly successful WCS intervention with considerable potential for growth. Working with RDB counterparts, the three-person WCS team focuses on education in schools, outreach to communities, and conflict resolution. There are currently twenty focal schools: 10 selected as pilot schools, another 10 identified from RBM “high threat” areas. Core approaches include teaching modules, student plays with conservation themes, and educational card games for animal identification and habitat relationships. Teacher training is part of this approach. The knowledge and awareness study conducted by the WCS International Education program showed relatively high awareness of the park and its values, as well as many knowledge gaps to be filled. The USAID evaluation saw this as an opportunity to add more positive messages, especially to younger school audiences, to what it saw as more negative threat-reduction themes. All of this indicates much valuable work to be done over coming years if future generations are to receive an education with relevant conservation content. However, with more than 200 schools – 10 times the current focal number – spread around the Nyungwe periphery, the question needs to be asked where added staff, mobile units, projectors, etc. will come from. Does RDB – already under increasing pressure to privatize its operations – see this as a priority? Do donors?



Student performance of conservation-themed play in Cyamudongo
Credit: Yufang Gao

Community outreach activities have thus far concentrated primarily on fire reduction and strengthening the ANICO (Animateur de Conservation) program. Fires are always a dry season threat in Nyungwe, though in recent years their incidence and extent have declined. RDB NNP staff have invested considerable time and effort in working with local communities to reduce fire incidence and to promote rapid responses in reporting and fighting fires once started. WCS has brought in US Forest Service experts to help advise on a Fire Management plan. The role of the Education and Outreach program is to reinforce these efforts with their messaging to schools and communities. ANICOs are key agents in this process.

ANICOs are individuals identified from communities around the park, one per sector, with sufficient education and standing to serve as voices – as well as eyes and ears – for conservation. The ANICO program was first initiated in Nyungwe in the late 1990s. It failed, but not before being transplanted to the VNP. There, ANICOs have been organized as a cooperative, with direct support from both RDB and conservation NGOs. Today, ANICOs are again active around Nyungwe, with one in each of 54 sectors. How they are organized and supported remains in question. What they do, however, may be more important to their long-term success. One idea is to expand their role beyond encouraging respect for park rules and reporting violations, to make them multi-faceted extension agents. This could be done by exposing ANICOs to activities like the improved agriculture and nutrition programs at the Kageno project in Banda, or other agricultural programs, as discussed in the USAID evaluation, or improved wood stove initiatives, or improved honey

production methods. They could also help to multiply the messages of the school education program. The end result would be a more positive role, supportive of community development interests, with better prospects for long-term success. It will also require greater commitment and support from RDB, WCS and donors.

Lessons Learned:

- Community outreach and development activities intended to reinforce conservation efforts require careful and consistent messaging that links these initiatives. This was not done in the 2006 to 2009 USAID project that combined support for conservation with funding for health programs in communities around Nyungwe. Staff from the two project components rarely met and, as a result, excellent opportunities to link forest health with human health were missed – an experience shared with many other conservation initiatives around the world.
- Education and outreach are much discussed – and usually under-funded. RDB, WCS and interested donors need to engage in careful discussions and secure commitments before planning any significant expansion of E & O activities and geographic coverage.

6. Enterprise Development

With a few minor and two notable exceptions, the promotion of enterprise development among local communities and cooperatives has not been an area of major WCS engagement. In part this reflects the skill set of WCS staff, in part the tendency of donors to direct their support to more development-oriented NGOs. It does not reflect the true importance of this sector.

Improved honey production and marketing has been a long-term WCS focus. The Ubwiza bwa Nyungwe Beekeepers Union has built on earlier efforts to form cooperatives to improve harvesting and processing techniques. Now, with more than 700 members (23% women) organized in 13 cooperatives, production from roughly 3500 hives should approach 7 tons of pure honey in 2013. Marketing outlets have been expanded to the NNP reception at Uwinka, stores in Huye and Kigali, as well as the primary outlet in a new roadside store in Kitabi. The mayor of Nyamasheke also stated a strong interest in seeing a comparable processing and sales outlet in his community on the newly paved road along Lake Kivu. Expansion to the East African market is a major next step. However, it must be noted that almost all of the Union's current production comes from hives located in the Nyungwe Buffer Zone, from where the bees can access varied nectars from the diverse tree species of the rainforest. In that regard, the recent decision by the New Forest Company – holder of a long-term buffer zone concession – to order 1500 cooperative members' hives removed from the first buffer zone section it intends to harvest is troubling.



Ubwiza bwa Nyungwe honey products and outlet store in Kitabi
Credit: Rebecca Ashwood (WCS Business Advisor/VSO volunteer in Kitabi)

Energy efficient wood-burning stoves represent a second area of WCS enterprise promotion. While the ultimate goal is that of decreased demand for wood and related illegal forest entry, the stoves first introduced in the Bweyeye region also represent an opportunity for a business or cooperative to build and distribute them to a larger area. This is now under investigation, with attention to whether this can be done without further continued WCS and/or donor support.

A final intervention may not qualify as enterprise development, but is worth mentioning nonetheless. Assisted regeneration is a technique developed by WCS in which the dense fern cover that emerges post-fire is cut by hand to permit regrowth by native tree species hidden beneath the ferns. Now in its 9th year, assisted recovery has proven to be very successful, but also very labor-intensive and time-consuming. Teams of 30-40 people from the Kitabi and Banda areas have been trained to cut, clear and weed burned areas, two weeks per month. This is a relatively significant level of employment for these communities and, while not an enterprise, it is potentially sustainable for many years if carbon-sequestration funding becomes available, as envisaged in a proposal now pending approval and action.

One action not yet undertaken, but in the USAID work plan, is to assist in development of a value chain for bamboo products in the Nshili community bordering southeastern Nyungwe. This is the only part of the forest with bamboo habitat, which supports rare owl-faced monkeys, perhaps golden monkeys, and other species dependent on bamboo. Many people in Nshili also depend on bamboo to make mats, baskets, and other market products. The problem is that the bamboo for these products comes almost entirely from illegal harvesting within the park.

WCS's perspective on this is that initial attention should be given to developing bamboo resources outside of the park before any promotion, or even identification, of markets for bamboo products.



Assisted regeneration in burned area, eastern side of Nyungwe National Park
Credit: Vedder/Weber

Lessons Learned:

- While more development-oriented NGOs or private actors may be more experienced in enterprise development, WCS's long-term commitment to Nyungwe has enabled it to remain engaged with beekeeper cooperatives and the new Bwiza bwa Nyungwe Union for more than a decade. This extended nurturing period has permitted the group to learn, adapt, and ultimately make progress.
- A fundamental question arises with programs of enterprise development, or outreach, involving intervention with local communities around a large, complex, often inaccessible park like Nyungwe. Is it better to have project representation around the entire park? Or to concentrate activities so that enterprises, education, agriculture and health extension can all be integrated within a much more limited sphere? The answer remains elusive.

7. Nyungwe-Kibira Transboundary Collaboration

Since providing technical support to Peace Corps volunteers in Burundi's Kibira NP in the late 1980s, WCS has always regarded the 400 km² Kibira park as part of a larger Nyungwe-Kibira conservation area. Over the next twenty years, however,

insecurity concerns on first one, then the other side of the invisible forest border delayed progress toward that goal. With determined shuttle negotiations by WCS's Barakabuye and Masozera and the full support of RDB, a preliminary agreement on transboundary collaboration was signed by RDB and Burundi's INECN in 2008. Elaboration of a framework for full collaboration is now in progress.

Current activities are focused on quarterly patrols and wildlife surveys in the immediate transboundary region, as well as WCS playing an advisory role with INECN as it seeks to gain conservation capacity. Future activities are likely to include greater INECN capacity building in RBM, research and monitoring, and tourism.

Lessons Learned:

- Transboundary parks are double-edged swords: adding conservation impact within contiguous areas when they work, adding conservation challenges when failed political or economic conditions increase threats and prevent effective action on one side.
- Patience and persistence pay dividends.

8. Post-Conflict Donor Support

As noted earlier, international donor support for Nyungwe conservation in the post-genocide period was strictly limited to that from WCS. Some Dutch support came in 1999, with US State Department funds for infrastructure repair in the early 2000s. US Fish and Wildlife and the MacArthur Foundation (for the Albertine Region) also provided limited funding. In 2006, the UNDP/GEF began funding efforts to restore biodiversity management capacity in Nyungwe NP, Volcanoes NP, and the RDB central office. Also in 2006, USAID was the first and only bilateral donor to engage directly in a significant way with Nyungwe. Since that time, USAID has been the primary supporter of in-park conservation, ecotourism development, and outreach to local communities. It has also been the leading source of support for WCS field staff.

Lessons Learned:

- When conflict and/or economic collapse envelop a nation, international development agencies will quite rightly focus their assistance on the most urgent needs for national recovery. This means that secondary concerns like conservation will require NGO support – or no support at all, as in the case of Akagera – for possibly quite extended periods. Given the tight link between tourism and national development in Rwanda, however, it might be helpful to review whether waiting 13 years for renewed international support to Rwanda's parks and tourism was necessary or even optimal. Certainly donors in Burundi should not wait this long to support conservation in Kibira NP.

- It is unlikely that conservation in Nyungwe could have succeeded post-1994 without the presence of Rwandan personnel with leadership and management experience and a commitment to conservation. WCS could supply a modest flow of needed money, but Rwandans provided the commitment that made the transition possible through a long post-conflict period.

Further Reflections

Some final observations, looking both back and forward, lie outside of the original scope of work for this report. Yet they seem worthy of brief mention here in the hope that they will spur further discussion.

1. Science is essential for good conservation and that science must include attention to local people and their needs – as well as to nations and their development aspirations. Failure to sustain basic research and monitoring functions within both the biological and socio-economic spheres risks uninformed management decisions that can undermine conservation and its attendant benefits.
2. Conservation is more than science. The results of research and experience must be communicated in a manner and language that resonate with target audiences – whether local, national, or international. And that communication should lead to informed action, if it is to have applied conservation value.
3. Conservation never ends. There are always new challenges to which successful organizations and initiatives must adapt – and adaptation is less difficult if changes and challenges are identified in advance.
4. Privatization is a powerful and growing force in Rwanda. Conservation may be its next frontier. This could open new opportunities to generate and distribute wealth through socially responsible ecotourism. It could also pose new – perhaps radically different – challenges to managing the wildlife and wild places that are the source of that wealth. The conservation community should proactively engage with government and agency partners to help inform discussions of this potential new frontier

WCS in Nyungwe

Selected Bibliography: 1985 - 1995

Many documents pertaining to the early history of WCS, USAID, and GOR involvement in Nyungwe were lost in the upheavals of 1994. Some key documents recovered from USAID and WCS archives in the course of researching this report are listed below. Copies of these documents can be obtained through the WCS Rwanda Program. Additional information on early WCS involvement with mountain gorillas and Nyungwe Forest conservation can be found in *In the Kingdom of Gorillas* (Weber & Vedder. 2010, 2001. Simon & Schuster).

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K) APPENDIX IV

Nyungwe National Park: Conflict Mapping.

A summary of the findings from the conflict mapping exercise carried out by the ANICOs (May-October 2014)

Compiled by Claudine Tuyishime and Joel Musaasizi

Tackling a conflict starts with a complete understanding of it. In order to resolve conflicts, we need to understand what drives them. Therefore, the two conflict mapping tools (conflict tree and conflict maps) upon which the ANICO and rangers were trained by IISD need to be put to use. Through practicing to use the tools that should make it easier to analyze and discuss causes, influences and each stakeholder's motive in conflict areas. Again if the people trained do not use the skills they were trained on they are bound to forget.

For the Nyungwe case, there is need for the ANICO as key players in the conflict resolution process to do 2 things:

1. Understand the kind of conflicts manifesting in their area of work
2. To go deeper and clarify the areas that need to be worked on, which means the relationships which need to be rebuilt.

It is under that context, ANICOs have done the exercise of identifying conflicts in their areas, identify the causes which drive the conflicts, clarify effects on biodiversity and communities, and propose strategies that can be used in addressing conflicts. These should also help the Park, ANICOs and other stakeholders to take actions towards conservation of the Park.

Conflict Identification

ANICOs in all cells identified a number of current (and potential) conflicts affecting Nyungwe NP and they identified the conflicts caused by park animals. The forest resources have been accessed by communities mostly for poaching, mining, trees cutting, bamboo cutting, and herbs collection; also human-wildlife conflicts has been identified mostly in the form of crop raiding.

A list of identified conflicts for all districts bordering Nyungwe National Park, are summarized in the table below.

Table 1: Conflicts identified in Nyungwe NP

District	Conflict type	Conflict description
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Nyamasheke	Human-wildlife conflict	The destruction of community crops, damage of livestock by park animals and the lack of compensation for those losses create tensions between the park and the communities. The compensation law is there but yet no one around Nyungwe has been reimbursed,. Again when the value of damaged crops is under 25 thousands Rwandan francs (25000RWF), no compensation is expected. The crop raiding has been reported in Bushekeri, Cyato, Karambi and Ruharambuga
	Resource-access conflict	Tensions over the immediate use of Nyungwe NP's natural resources for revenue and livelihoods, and the conservation of those resources for biodiversity, environmental health and the use of future generations. Specific resources identified as central to conflicts in Nyamasheke were: minerals (for mining inside the park in side of Kamiranzovu); timber (for harvesting in the park and buffer zone mostly in Rangiro sector); non-timber forest products (including bean stalks,); setting beehives in the forest (and resulting forest fires, side of Karambi sector); and poaching of park animals (for bush meat).
Nyaruguru	Resource-access conflict	Specific resources identified as central to conflicts in Nyaruguru were: bamboo, herbs used as litter in Ruheru sector; timber (for harvesting in the park and buffer zone); land for cannabis cultivation in Nyabimata sector; poaching of park animals for bush meat in Muganza sector.
	Human-wildlife conflict	The crop raiding which has been reported in Ruheru sector, Ruyenzi cell, and the lack of application of the compensation law cause the tension between communities and park.
Nyamagabe	Human-wildlife conflict	The destruction of community crops by park animals and the lack of compensation for those losses have created tensions between the park and the communities. The crops damaged are mostly Irish potatoes and the baboons are known as common raiders. This has been reported in Kitabi sector.
	Resource-access conflict	The immediate use of forest resources creates the tensions between Park and communities as the park management wants to conserve the forest resources and its biodiversity. Specific resources identified as central to conflicts in Nyamagabe were: timber harvested from park and buffer zone, charcoal making in and out of the park, herbs used as litter, park animals poached for meat purpose.

Rusizi District	Human-wildlife conflict	The human-wildlife conflicts have been reported in Bweyeye sector where the main crop raided is maize. The injury of people by jackals has been also reported.
	Resource-access conflict	The use of different forest resources creates conflicts between park and surrounding communities. The park management is interested in conserving the forest resources including biodiversity and different habitats, while the community want to use them for fulfilling their daily needs. The resources mostly harvested from the Park in Rusizi District are minerals, trees, park animals inside of Bweyeye and Butare sectors. Herbs, firewood and trees have been reported as the resources harvested from Cyamudongo forest.
Karongi District		In Karongi district, the passage of cattle in the forest has been reported. Sticks collection in National forest and trees cutting (for sawing and charcoal making) mostly in the buffer zone also has been reported in Karongi district, mainly in Twumba sector. Honey collection from natural forest also has been reported in Gakuta cell.

Conflicts Analysis

In all districts the park resource use by communities has been identified, and ANICOs have chatted with different resources users to learn why. The following paragraph summarizes the root causes for different conflicts, effects and potential solutions. The top five conflicts which could have a big impact on both biodiversity and communities are described below:

a. Poaching

Causes:

Mainly the poaching of park animals targets bush meat. ANICOs have identified a number of causes for the conflict over poaching. The poverty in the area is a big challenge and it often pushes the communities into park in search of bush meat for local consumption. The low awareness among communities towards conservation laws also pushes them to use park illegally. Additionally to this, laws are not applied properly for those who have been caught poaching, so people think that killing park animals is not a crime. Some communities poach because cultural thinking saying that even their ancestors were poaching in the same forest.

Effects:

The effects of poaching identified by ANICOs have two sides: there are effects on park/biodiversity and the effects on human beings.

The effects on park/biodiversity include losses of animal species including the ones attracting tourists, the fact that some poachers camp in the forest resulting in bushfires, and the use of bush toilets and littering causing disease to wild animals.

The effects on human being include the punishment (jails/fines) that can be given to poachers when caught and injuries caused by animals. Also ANICOs said poachers can be isolated from other community members and remain in poverty; they are not self confident; they are negligible in the community. The loss of animals attracting tourists will have an impact on the national economy and the benefits which come back to surrounding communities will be reduced.

Additionally, poaching negatively impacts the relationship between the park and communities, e.g. when poachers are arrested by rangers, there is a tension between a poacher's relatives and park rangers. This also can result in bad relationships between park staff and police as sometimes the poachers are released after a short time without even being prosecuted.

Strategies:

ANICOs' proposed solutions to reduce/mitigate poaching within National Park:

Education and outreach: This has been proposed as a solution to address the low level of awareness, to increase knowledge, change attitudes and lead to good behaviours towards Nyungwe conservation.

Find alternatives: The poverty/lack of alternatives has been reported as a main cause of poaching. ANICOs proposed that helping poachers to find alternatives would be one solution to address poaching; as well as the proposed creation of jobs for poachers (manpower), helping them to raise small livestock.

Apply the laws: When caught, the poachers could be punished by the law to show others that killing animals is a crime. Otherwise when the poachers are caught and released without applying any law, it discourages both park staff and communities, mostly ANICOs who gave the information.

b. Mining

Causes:

ANICOs have identified poverty as a driver of mining in Nyungwe National Park. This refers to the poor people who go in the forest for mining, maybe pushed by minerals traders. The low level of awareness may also push the communities to continue mining; this refers to the communities who are not updated about the laws. Others mine because they do not have other jobs and because they are near the Nyungwe sites which have minerals.

Effects

The effects of mining on biodiversity will be related to the destruction of habitats and food for park animals. Erosion can also result from the mining, as well as water pollution. The miners are used to camping in the forest, using bush toilet and littering, which can be a source of diseases for park animals. ANICOs reported that some miners also set snares which could catch animals. On the side of communities, the miners can be punished by imprisonment or fines, which can affect the whole family. There is a risk of death for miners by the landslides when they are in mining sites.

Strategies

ANICOs proposed the following strategies to eradicate mining in Nyungwe National Park:

Creation of income generating activities: Poverty has been reported as a driver which pushes miners into the forest. Creation of small projects and creation of jobs in the area could reduce the mining in Nyungwe National Park.

Break the mining chain: The miners are pushed into the forest by the minerals traders who buy even those coming from the forest. The price of minerals is appreciable, and that pushes them to continue mining without considering the values of National Park.

Education and outreach: Education and outreach has to focus in the areas of mining, to help the communities to understand the values of Nyungwe Park, and to get updated on laws governing a national park.

Application of laws: Weak law enforcement has been reported as a factor which pushes miners back into the forest; the laws have to be applicable as they are. When caught, miners are punished; after the punishment they will not go back in the forest, and it will be clear for others who were attempting to mine in the forest that mining is a crime.

c. Bamboo cutting

Causes: ANICOs tried to identify a number of drivers of the bamboo-cutting conflict in Nyaruguru district. The bamboos are used to make handcrafts and build the houses. The poverty in the area pushes communities into the park to look for bamboos for income and livelihoods. The low level of awareness has been also reported as community is not updated on the current conservation laws and the weak law enforcement

pushes them to continue using those resources. High demand of bamboos in the area of Nyaruguru, and the way the communities live just near the park, push them to use those bamboos because it is easy to collect them. Lack of bamboos in their lands also pushes the community to collect illegally from the Park.

Effects: This conflict has had number of impacts on both the park and the local communities. For the park conservation, the bamboo cutting decreases the food and habitat of the vulnerable species: Owl-faced monkey. For the communities, fines and imprisonment have been reported as negative impacts that can affect communities who cut bamboos and their relatives as well. The lack of alternatives to bamboos can cause poverty to communities bordering bamboos areas, as bamboos have a great use value in that area.

Strategies: Two main strategies have been proposed in order to alleviate bamboos cutting from Nyungwe National park.

Education and Outreach: Sensitization campaigns to raise community awareness of Nyungwe conservation values and laws could help change local mindsets and behaviours. These should be organized in collaboration with RDB, army, police and local government.

Bamboos planting: To address the high demand of bamboos in the area, many bamboos should be planted in lands of surrounding communities (outside of the park); timber species could be planted in the area for construction and making furniture. Additionally, support should be given to income-generating projects in the district that target legal resource exploitation.

Application of the laws: When caught, the bamboos cutters should be punished.

d. Crop raiding

Causes: Because communities grow their crops at the edge of the park boundary (in areas with no buffer zone), park animals are attracted by food crops and destroy them. The lack of compensation (nobody has been compensated around Nyungwe) creates tensions between the park and the communities.

Effects: The destruction of community crops by park animals leads to hunger and loss of income at the household level. Communities have not yet received compensation for their losses as the compensation law is not yet operational around Nyungwe National Park. Communities spend a lot of time dealing with crop loss or protecting their crops; this has a negative impact on their regular activities. The law stipulates that the losses whose the value is under 25000FRW are not compensated, creating a conflict between park and communities as it seems communities with small land or low income have not been considered in drafting the law.

Considering above effects, there are risks of killing animals; animals which are not identified in the law will have a high risk of being killed when raiding communities' crops; e.g. the vervet monkeys are reported to destroy the crops, and the law says that there will be no compensation if the crops are damaged by Vervet monkeys. This has given a bad message within communities thinking that Vervet monkeys are not valuable.

Strategies: ANICOs have proposed the following strategies to alleviate the conflict over crop raiding:

Application of compensation law: The government should continue to try to implement the country's new compensation law, to ensure that those community members that lose assets in crop-raiding incidents are suitably compensated for their losses.

Protection of crops: The communities should put efforts in protecting their crops when they are grown at the edge of the park in order to prevent the crop raiding.

Education and Outreach: Different awareness-raising campaigns should be conducted in the areas reported for crop raiding. These will help in improving community perceptions of the values of Nyungwe, and help to reduce the number of animals that could be killed in response to crop raiding.

e. Timbers harvesting

Causes: A lack of timber resources outside of the park and buffer zone is a key driver of the conflict. This makes communities go into the forest to harvest timbers for different uses. The timber harvested is mostly used in charcoal making and planks making (which definitely are used for furniture making). Some are collected to make traditional materials (mortier et cuve), others to make beehives. Lack of forests outside of the park and buffer zone pushes the communities to collect firewood from Nyungwe National Park.

Effects: ANICOs have reported deforestation as the effect of timbers harvesting, leading to destruction of habitat and food for park animals. The deforestation could lead to erosion and movement of animals. On the side of communities, ANICOs have reported fines and imprisonment as the negative impacts which can affect the communities.

Strategies: ANICOs proposed the following strategies in eradicating timber harvesting in Nyungwe National Park:

Support Agro forestry program: To mitigate the timber harvesting and meet the local demand, the agro forestry program should be supported by RDB or/and other partners.

Education and outreach: The sensitization campaigns should be organized in areas where timber harvesting is reported. This should help communities to understand the values of the park, impact of timbers harvesting on biodiversity and impact on themselves.

Application of laws: Those who do not give up the timber harvesting should be punished following the environmental law; if illegal timber harvesters are caught and imprisoned, it can be a model for others who were thinking to do the same activity.

L) APPENDIX V

Gender Analysis for USAID/Rwanda “Sustaining Biodiversity Conservation in and Around Nyungwe National Park” Project with Wildlife Conservation Society

Conducted by Natalie Elwell (USAID/E3/GenDev), Triphine Munganyinka, and Patrice Hakizimana (USAID/Rwanda/Program Office and Economic Growth/Agriculture Office, respectively).

Background

The gender analysis for the USAID/Rwanda conservation project implemented by Wildlife Conservation Society (WCS) was conducted between February 18-28, 2014, by Natalie Elwell (USAID/E3/GenDev), Triphine Munganyinka, and Patrice Hakizimana (USAID/Rwanda/Program Office and Economic Growth/Agriculture Office, respectively). This analysis was conducted through a process that would not only provide insights to WCS and USAID as to gender issues within conservation programming and recommendations for addressing them, but also one that would provide them with a tool for such analyses that may be used in conjunction with future project design. As USAID funding to WCS is ending within a year and USAID environment programming will likely take a much different form, the recommendations include suggestions for modifications to programming that can be accommodated in the short-term, as well guidance requiring a longer-term approach.

To ensure that conservation activities are closing, rather than widening gender gaps, it is important to understand:

1. How do the primary economic activities differ between men and women, and how do these vary by geographical location, age and ethnic group?
2. How do different Government of Rwanda policies and traditional governance structures/practices (e.g. land tenure, inheritance practices) create different levels of engagement in and benefit from conservation-related activities?
3. How do traditional and cultural norms (i.e. ‘gender roles and responsibilities’) affect conservation practices, and how do they vary by location, ethnic group and age?
4. Where are the key entry points for inclusive conservation programming?
5. How will project activities focus on the respective strengths or capacities of men and women?
6. How are gender roles affected by other factors such as ethnicity or age?

This analysis considers these questions and their implications for programming.

It is important to note that a gender analysis is not a ‘woman’s analysis,’ but needs to consider the different threats, impacts, and opportunities of men and women. This principle is affirmed by President Kagame, as cited in the National Gender Policy of Rwanda, where he states “gender equality is not just women’s business, it is everybody’s business and that gender equality and women’s empowerment are critical to sustainable socio-economic development”.

Existing Gender Analyses/Assessments

This analysis draws heavily upon several existing higher-level gender analyses that have been conducted recently of the conservation sector in Rwanda. These include The World Bank Policy Research Working Paper “Environmental and Gender Implications of Land Tenure Regularization in Africa: Pilot evidence from Rwanda”¹; Wageningen Centre for Development Innovation Mission Report “Gender Scan for KCCCEM in its Wider Context”²; as well as USAID/Rwanda’s 2011 Gender Assessment. A number of other reports are also cited throughout the findings section of this report.

¹ D. Ali, K. Deininger, M. Goldstein. 2011. “Environmental and Gender Impacts of Land Tenure Regularization in Africa: Pilot evidence from Rwanda.” Policy Research Working Paper 5765. The World Bank. Accessed at http://www-wds.worldbank.org/external/default/WDSCContentServer/TW3P/IB/2011/08/18/000158349_20110818104704/Rendered/PDF/WP5765.pdf

² D. Klaver and J. Bariho. 2012. “Gender Scan for KCCCEM in its Wider Context.” Mission Report. Wageningen UR Centre for Development Innovation.

Stakeholder Consultations

In addition to a literature review, consultations and focus group discussions were conducted in Rwanda. A complete list of persons/groups consulted is included in Annex A.

Main Findings: Literature Review and Interviews

Cultural, traditional and social norms and beliefs

Traditional beliefs that women and girls are responsible for domestic activities limit their time and mobility for educational and civic activities, reducing their access to information about and uptake of conservation practices and sustainable alternative livelihoods. These norms are perpetuated by parents who aren't engaged in educating their children to the changing gender roles. Additionally, cultural beliefs about the roles of men and women segregate them in economic and civic activities, and place greater value on the tasks, which men undertake. This undervaluing of women's roles and contributions leads to their exclusion from decision making in both the household and the community. When women's priorities are not considered in decision-making, they continue to go unsupported by extension services, they may be restricted from accessing resources needed for the household and the benefit of their particular insights into resource management is lost.

Engaging women as well as men in training and outreach activities increases their impact on behavior change that supports conservation objectives. The tendency of women to be more communicative results in them sharing their learning with their children, spouses, relatives, and neighbors, whereas men tend to keep new information to themselves. Men's support for changing social norms is limited; men see health seeking behaviors as a weakness and therefore do not care for themselves or see health care as a priority for their families; male masculinity is tied to the number of children they have; men also see contraception as opening the door to female promiscuity.

Gender-based violence is a widespread problem, domestically, in schools and communities. There is a traditional belief that women must attend to men's needs and deserve punishment if they fail in this regard. Household poverty also causes stress that often leads to domestic violence. A lack of trust and communication between couples, as well as an imposition of traditional restrictive practices for women can lead to domestic violence when women step out of the boundaries of tradition. Engaging women without the involvement or consent of their spouse may put women at risk of abuse. Violence against women leads to increased health care expenses, and reduced productivity and engagement in community activities.

Practices and Participation

Insecure access to resources leads to unsustainable practices for livelihoods and conservation. The majority of women-headed households fall under the poverty line and in some cases, women headed households (often vulnerable women and youth – widows, orphans, women living with HIV) have less secure access to land due to lack of proper law enforcement and/or use of customary law by authorized institutions to adjudicate land related cases. This may lead them to tap into the forest to meet livelihood needs and/or to invest less to increase the productivity of their land if they fear it may be taken from them.

Employment categories within and livelihood activities related to conservation tend to be sex-segregated. Field guides and trail maintenance positions tend to be filled by men, as the work is physically demanding and remotely located. There is a preference for women to work in hospitality, which is traditionally women's domain. Additionally, men take up activities that are more remunerative and when an activity done by women leads to increased income or takes on higher value it is often overtaken by men. If alternative livelihoods do not offer adequate compensation, men will not get involved. However, unless cultural norms that undervalue women's role and contribution to household livelihood change, women's vulnerability will push them to risky and unsustainable livelihood practices.

After primary school, there is imbalance in the educational attainment of men and women, both formally and in trades. There is no formal discrimination, but due to family responsibilities and social norms, women tend to be excluded. Institutions of higher education pose physical and social barriers to access by girls and women: facilities are not designed to accommodate females; attitude of instructors and male students can be harassing to female

students.³ Due to limited education and exposure, girls and women tend to have less confidence than men; limiting their public engagement and making them risk-averse (credit, entrepreneurship). However these barriers are being addressed through affirmative action and awareness-raising within these educational and training institutions.

Access to and Control over Assets and Resources

Male dominance over resources hinders the potential of the entire family to rise economically. Despite policies and laws mandating equality of resource rights, men dominate over financially valuable resources; land, animals, businesses, income-generating activities. Men dominate in leadership and decision-making in the community and in the family, and often have a limited understanding of the needs of their spouse for meeting their responsibilities related to the household, community, and individual development.

Disparities for women compound over their lifetime and leave them disadvantaged even when opportunities are offered to them. Illiteracy and lack of self-confidence for women often stop them from accessing resources and financial opportunities available in the community. This limits their potential to rise above subsistence and dependence on natural resources to meet their livelihood needs. Access to credit for women in Rwanda is only limited by their more limited capacity to develop adequate business plans, which stems from their limited education.

Lack of awareness of women's needs limits their potential to engage in civic and livelihood activities. Many private sector employers are not aware of how to attract or accommodate women; therefore women are excluded from jobs. Government services and support is not consistently available to everyone, as extension and outreach services are often dependent on individual relationships with the extension agent, who are, by and large, men.

Laws, Policies, Regulations, and Institutional Context

Implementing policies and laws that change social norms is a long-term process. There are many laws and policies within Rwanda that are supportive of gender equality. The Rwandan Constitution provides that men and women in a civil marriage have equal rights in duties, both during their marriage and in the event of divorce. The Land Law of 2013 states that both a man and a woman lawfully married have rights over land depending on the type of matrimonial regime they opt for. However, the legal framework only provides for shared land rights to couples who are married under civil law. Women married under custom or in *de facto* unions are not protected by this new legislation. Ministerial Order N°002/2008 of 01/4/2008 Determining Modalities of Land Registration further defines the modalities for land registration, including the establishment of a Register of Land Titles, procedures for the registration of titles to land and other interests in land, transfers of title to land and other transactions related to land, and related matters. The order mandates that couples in civil unions must register land jointly if married under full or limited community property, a provision that is echoed in the current Draft Succession Bill in the case of marriage under the community property regime. However, this requirement does not apply for spouses in customary marriages or consensual unions. Land registration policies do not disallow women in informal marriages, including those in polygamous marriages, to be registered jointly with their husbands or for their husbands to provide them with shares of land which may be registered individually in the informal wife's name. Yet, this ultimately depends on the will of the primary landholder, which is typically the husband. However, more awareness-raising for individuals and local institutions is needed of their existence and of how to implement these laws. Additionally, the National Gender Policy and its associated strategies are not supported by all community and religious leaders, causing confusion and/or lack of implementation.

The National Gender Policy contains strong support for gender equality in the environment sector, calling for programs that:

- Facilitate and support women and men's participation in environmental protection and management.
- Facilitate equal participation and benefit between men and women from land rehabilitation schemes and other economic empowerment schemes;
- Equip vulnerable men and women with knowledge and skills for self-reliance.

³ A.Huggins and S.Randell. 2007. "Gender Equality in Education in Rwanda: What is happening to our Girls?" Rwandan Association of University Women. Accessed at <http://www.shirleyrandell.com.au/ftp/GenEquEdRwanda.pdf>

Land tenure regularization has had a positive impact on women's empowerment and on their contribution to conservation. A study by the World Bank⁴ found that individuals whose parcels had been registered through LTR, in particular female-headed ones, were much more likely to invest in soil and water conservation measures on their land. Further, legally married women were significantly more likely to have their rights to land and inheritance secured. Although the expenses associated with formal marriage have been a deterrent, many women have pushed for legal marriages since the institution of land tenure regularization.

⁴ D. Ali, K. Deininger, M. Goldstein. 2011. "Environmental and Gender Impacts of Land Tenure Regularization in Africa: Pilot evidence from Rwanda." Policy Research Working Paper 5765. The World Bank. Accessed at http://www-wds.worldbank.org/external/default/WDSContentServer/TW3P/IB/2011/08/18/000158349_20110818104704/Rendered/PDF/WP55765.pdf

Main Findings: Community Consultations

Due to time constraints, the community consultations focused on only one strategy: Identifying and supporting sustainable alternative livelihoods to reduce harvesting from national parks.

Conservation activities in support of community livelihoods			
Activities	Identified Gender Issues	Recommendations	Time Frame
Trail maintenance	<ul style="list-style-type: none"> Security and lack of adequate facilities exclude women from certain activities (positions within the park) 	Consider adequate facilities for women (separate shelter/accommodation, toilets)	Long-term
Beekeeping	<ul style="list-style-type: none"> Cultural traditions have a lot of influence on the activities of men and women (beekeeping and handicrafts) Decision making on resources and activities at household and community levels are dominated by men 	Awareness raising targeting men and women on changing gender norms to foster empowerment and equity of opportunities	Long-term
Small livestock raising			
Handicrafts			
Energy efficient stoves	<ul style="list-style-type: none"> Women tend to have less access to information on opportunities Young men are less informed about livelihood activities 	Develop gender & youth-sensitive information campaigns using dissemination methods accessible to women and youth	Long-term
	<ul style="list-style-type: none"> Young men are more involved in activities that provide quick economic returns, which are limited in number (trail maintenance) 	Diversify livelihood opportunities targeting youth	Long-term
	<ul style="list-style-type: none"> Women's responsibilities limits the time they have available to engage in some revenue generating activities, particularly those far from home 	Facilitate locating worksites for women that are closer to home (assigning more distant trails to men to maintain)	Short-term
	<ul style="list-style-type: none"> Selection of beneficiaries often targets ex-poachers, which are predominantly men, excluding others (potentially creating a perverse incentive to poach) Women's representation in cooperatives is limited 	Encourage women and youth to join cooperatives (identify and reduce their barriers to participation)	Short-term
	<ul style="list-style-type: none"> Women have less formal education and technical skills, limiting their engagement The perception that women are weaker, limits their access to activities that require physical strength Women are more involved in activities that are less remunerable Women lack self-esteem and confidence, limiting their participation in civic and economic activities. 	Provide technical skill building activities; mentoring on empowerment and equity of opportunities for women	Short-term

Gender Issues in Conservation Programming

Conservation Activity	Potential Gender Issues	Recommendations
Sustainable alternative livelihoods	<p>In addition to what is mentioned above in the community consultation section, it is important to be aware that women tend to be relegated to the low end of value chains. For example, with improved cook stoves, men are involved in the income-generating components of constructing and selling the stoves, whereas women must purchase and use the stoves. Although women may accrue benefits from use of the stoves (cleaner air, less time collecting firewood), they are often not consulted on the design of the stoves or trained on their maintenance, and therefore stoves are not used over a sustained period of time.</p> <p>Division of labor is not necessarily a bad thing, but should be determined by interest and ability, not sex.</p>	<p>Equitably engage and support women and men at all levels of a value chain.</p> <p>Ensure women are equitably consulted in decisions about livelihood opportunities. Note, this means conducting sex-segregated meetings, individual interviews and/or preparation sessions for women's groups prior to a community consultation so women may participate without the pervasive power dynamics that normally prevent them from speaking up in mixed-sex settings.</p> <p>Offer a range of livelihood activities and reduce barriers to broad engagement in them: cultural/traditional biases, time and location of activities, access to resources needed to participate, etc.</p>
Implement education and outreach programs to educate communities on the value of the park	<p>Educational materials tend to perpetuate the status quo through visual and oral representation of traditional social norms.</p> <p>Providers of education are often people embedded in the local culture and bound by its traditional practices. Perhaps unintentionally, but sometimes because of their attitudes regarding gender norms, their behavior perpetuates the status quo.</p>	<p>Modify education and outreach materials to illustrate equitable opportunities for boy/girls and men/women in conservation-related activities.</p> <p>Provide sensitization and training to educators (formal and informal), and ensure buy-in to the social changes being promoted.</p>
Develop Payment for Environmental Services (PES) schemes	<p>PES projects that specifically include women and marginal actors in the design of PES contracts tend to produce more gender equitable and cost-efficient outcomes than if they were excluded. Further, neglect of contextual factors such as customary land rights and cultural norms around tree planting in the allocation of PES contracts can undermine gender equity by alienating the resource rights of women.⁵</p>	<p>Understand current roles and responsibilities of men and women relevant to the PES scheme. Identify appropriate ways to engage men and women so that they equitably benefit from the project.</p> <p>Mainstream gender considerations and state gender equity as an explicit goal at the start of any PES project.</p>

Additional Recommendations

- Project activities should take a holistic view of household livelihoods, including contributions of women, men, and youth. All groups play a role in ensuring households have sufficient food and income and each group is vulnerable to changes due to conservation activities in different ways, but also, changes that affect one family member have an indirect impact on the livelihoods of all members of the family.

⁵Mamta Vardhan^{1,*} Delia Catacutan² on behalf of Gender in Agroforestry systems and Gender in Agroforestry systems ¹Dept. of Resource Economics and Environmental Sociology, University of Alberta, Edmonton, Canada, ²World Agroforestry Centre, Hanoi, Viet Nam. Accessed at <http://www.wca2014.org/abstract/gender-equity-in-payments-for-environmental-services-analysis-of-pilot-projects-in-asia-and-africa/>

- Men’s buy-in will be important for any specific activities aimed at women and youth. Any project activities designed specifically to empower or enable women and/or youth may create challenges to traditional power structures, especially those controlled by older men. Therefore, the project must work to understand, and to the extent possible, work through existing power structures to demonstrate benefits for and ensure buy-in from the entire community.
- Sex disaggregated data should be collected in project monitoring wherever possible. At a minimum, all indicators where individuals are counted (e.g. number of people doing...) should be sex disaggregated. This is a best practice, a potentially useful management tool to determine who the project is reaching, and of potential use to the Government of Rwanda, which is trying to increase capture of sex disaggregated data in the context of monitoring the *National Gender Policy 2010*. Whenever possible, indicators should also seek to monitor a project’s impact on improving gender outcomes. For example, possible indicators include “proportion of income from cookstoves earned by women” and “proportion of women engaged in cooperatives.”
- Women’s empowerment and gender equality can be very sensitive issues and if approached inappropriately, may cause more harm than good. USAID/Rwanda should ensure that the staff of partners are fully sensitized and trained to identify and effectively address gender issues within the context of their programming.
- The findings of this assessment should be reviewed for relevance to any projects that contain alternative livelihood activities, regardless of the sector.
- Consider supporting partnerships between conservation and development organizations to harmonize strategies that foster social change and ensure social soundness while effectively advancing conservation objectives.

Stakeholders Consulted for gender study

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Aloys Nsabimana Jacques Habimana	Chair Person Program Assistant	Association Rwandaise des Ecologistes (ARECO)	Phone: (+250)788530434 Phone: (+250)783267644
Chloe Cipolletta	Chief of Party for WCS Activity	Wildlife Conservation Society (WCS)	Phone: (+250) 0787112074 Email: ccipolletta@wcs.org
Focus Group Discussion with : WCS staff, National Women's Council representatives, Local teachers, Cooperative members Rwanda Development Board staff KCCCEM staff	Project participants	Nyungwe National Park area	Phone: (+250) 0787112074 Email: ccipolletta@wcs.org

M) APPENDIX VI: SUMMARY OF PLANNED Y5 ACTIVITIES⁶

Strategy I: Strengthening RDB's Biodiversity and Threats Monitoring Capacity

Outputs	Activities	Period	Staff	Partners	Indicator	Target
I.1: Biological Surveying capacity of RDB staff is strengthened	Stakeholders validation of biodiversity survey for NNP	March 2014	Felix/ Nicolas	RDB/ KCCEM, NUR		Biodiversity survey designed and validated
	Produce training manuals on research protocols and data management	March –April 2014	Felix/ Nicolas	RDB		1 training manual produced: 10 copies distributed (Y4 target delayed)
	Train WCS and RDB staff in research/survey design, data collection, database management and analysis	May 2014	Felix/ Nicolas	RDB/KCC EM	# of people receiving training in natural resources management and/or biodiversity conservation.	10 RDB & WCS staff trained (Y4 target delayed)
	Park-wide biodiversity survey	June-September 2014	Felix/ Nicolas	RDB		Biodiversity survey report produced
I.2: The capacity in Park protection and threat monitoring and assessment for RDB staff is strengthened	Monitor implementation of, and ad hoc support to, RBM and MIST program: data collection, analysis and reporting	March – December 2014	Felix/Nicol as	RDB/KCC EM (?)	% RDB patrols guided by analysis of MIST data	60% of RDB patrols are guided by MIST data; 12 monthly reports produced (by RDB)

⁶ Excerpted from Year 5 Workplan as submitted March 12 and approved March 23, 2014.

	Review biomonitoring data collected by rangers	March 2014	Felix	RDB/KCC EM		List of species monitored under RBM program re-defined
	Train park staff to monitor key animal species in the park (as defined in above review)	April 2014	Felix	RDB/KCC EM	# of people receiving training in natural resources management and/or biodiversity conservation.	18 RDB & WCS staff trained; biomonitoring data results included in RBM yearly reports
I.3: Capacity to monitor and model climate is strengthened, and baseline assessment completed	Secure regular data collection, extraction, quality control and analysis of climate data at Uwinka & Bigugu stations; training in climate data analysis with the Rwanda Meteorology Agency	March – December 2014, Training in May	Felix/Nicol as	RDB	# of people receiving training in global climate change	15 RDB & WCS staff trained; climate data collected, available and presented on yearly basis

Strategy II: RDB and Districts' capacity to manage conflict, mitigate threats and manage tourism is strengthened

Outputs	Activities	Period	Staff	Partners	Indicator	Target
II.1: Capacity to understand, manage and resolve conflicts is in place	Organize joint meetings with ANICOs and Law Enforcement Rangers	May, August 2014	Claudine, Joel	RDB	# of people receiving training in natural resources management and/or biodiversity conservation	4 meetings (1 per district); 100 rangers & ANICOs trained
	Provide equipment for ANICOs	June 2014	Claudine, Joel	RDB		100% of ANICOs receive basic equipment to carry out their volunteer role (raincoats, boots, notebooks, pens)
	Organize evaluation workshop on ANICO effectiveness in mitigating conflicts around	December 2014	Claudine	RDB		ANICO report on effectiveness and sustainability in

	Nyungwe National Park; present evaluation report					mitigating conflicts available and presented
II.2: Communities participate in conflict mitigation processes	Support ANICOs to organize local conflict mitigation forums in high threat zones	June-July, September-November 2014	Claudine, Joel, Vincent	RDB		5 forums organized; 150 total participants (30 per forum)
	Support ANICOs and local authorities in the use of RBM results to sensitize community on NNP conservation	Quarterly (and during forums)	Claudine, Joel	RDB		50% of ANICOs and DEOs use the information from RBM reports (assessed from the ANICO performance monitoring form)
II.3: Capacity to manage fire, and monitor mining and resource use impacts are in place	Facilitate meetings between park managers, local authorities and law enforcement agencies on fire fighting and prevention	June-July 2014	Vincent/Felix/Joel	RDB	# of people receiving training in natural resources management and/or biodiversity conservation	60 people (ANICOs, DEOs, RDB wardens) involved in organizing 4 meetings with authorities before dry seasons, and sector level meetings, on fire prevention; 1000 attendees
	Plan and facilitate trans-boundary quarterly patrols with Burundian counterparts	Quarterly	Nicolas	RDB, INECN	# of coordinated Nyungwe-Kibira patrols	4 coordinated Nyungwe-Kibira patrols carried out
	Provide support to user groups around Nyungwe to facilitate linkages with relevant partners and government programmes	March – October 2014	Joel/Vincent/Fidel	REDO, RDB	# of individuals from all targeted user groups participating in the program	100 participants
	Improve ecological conditions in areas that have been affected by wild fires in the past through forest assisted regeneration	March 2014– February 2015	Felix	RDB	# of hectares in areas of biological significance showing improved biophysical conditions	9 ha recovered by end Y5
II.4 Tourism impact monitoring program	Reinforce chimpanzee tourism impact monitoring data	March – December	Felix/Nicolas	RDB	# of people receiving training in natural	16 RDB staff trained

supports adaptive management of the tourism program	collection and analysis	2014			resources management and/or biodiversity	
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Strategy III: Strengthening the knowledge and interest of the Government of Rwanda to develop and support PES policies

Outputs	Activities	Period	Staff	Partners	Indicator	Targets
III.1: The Government of Rwanda has the knowledge and interest in establishing effective PES policies that fully support implementation of PES schemes and ensure that values equitably accrue to both government and communities.	Prepare a policy brief based on all PES related studies conducted around Nyungwe to inform the development of the PES policy process	July – December 2014	Mediatrice and Michel	REMA, RDB		Policy brief available and shared with key government agencies, private sector

Strategy IV: Develop (design and implement) a system of payments for ecosystem services (PES)

Outputs	Activities	Period	Staff	Partners	Indicator	Target
IV.1: Payment mechanisms for ecosystem services designed, with an emphasis on watershed services and forest-carbon	Finalization of the project documents: Technical Specifications and PDD	March – June 2014	Mediatrice	ECOTRUS TREMA, RDB and ADENYA		Final PDD and Technical Specifications reviewed and approved by Plan Vivo Foundation
	Carry out a stakeholders preferences assessment for PES options	April – June 2014	Michel, Mediatrice	REMA, RDB, USFS		Assessment report carried out

Strategy V: Develop Sustainable Alternatives for Resource Use

Outputs	Activities	Period	Intervention areas	Staff	Partners	Indicator	Target
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V.1: Improved energy efficiency in villages around Nyungwe from introduction of fuel efficient stoves and alternative fuel sources	Review EES adoption levels	May- June 2014	Bweyeye and Nkungu	REDO/Fidele	RDB		EES adoption report available
	Promote linkages for scaling up EES production around NNP	June – September 2014	TBD	REDO/Fidele	RDB		Increase EES use and production around Nyungwe
V.2 Creating incentives for reducing illegal bamboo harvesting	Support coordination of bamboo initiatives in Nyaruguru district	June-October 2014	Nyaruguru	Fidele, Vincent	RDB, Nyaruguru District, Rwanda Natural Resource Authority	# of individuals from all targeted user groups participating in the program	200 participants (total community members receiving seedlings, including cooperative members and those not associated with any cooperatives)

Strategy VI: Implement Education and Outreach Programs

Outputs	Activities	Period	Intervention areas	Staff	Partners	Indicator	Target
VI.1: Students in formal education (primary and secondary) will adopt a positive/supportive attitude to park conservation efforts based on a clear understanding of the multiple values of NNP, reduce the adoption of unsustainable behaviors as they grow into adults, and act as advocates for the value of the Park and its conservation	Monitor use of materials and implementation of activities; carry out support visits to environmental clubs	May – July 2014	Sectors around NNP	Claudine / Joel	RDB		20 schools visited; 1000 students participants
	Conduct school competition on the theme 'Protect Nyungwe'	June – August 2014	Sectors around NNP	Claudine / Joel	RDB		15 schools participating in competition; 300 student participants
	Conduct school evaluation survey	September – October 2014	Sectors around NNP	Claudine / Joel/ Nalini	RDB		200 students surveyed; report comparing results with baseline data available
	Conduct an evaluation workshop for educators	January 2014		Claudine	RDB		Evaluation workshop conducted; 20

							teachers /school directors planning post-project activities
VI. 2 : Vulnerable groups (community members responsible for threat behaviours in NNP) adopt a supportive attitude to the park and change their behavior based on understanding of the multiple values of NNP	Print education material (booklet and reprints of posters)	April 2014		Claudine / Joel	RDB		1000 copies of book; 300 poster reprints
	Organize community/school outreach events in high threat zones	June – July 2014	Sectors around NNP	Claudine / Joel	RDB	# of participants	2events organized; 2000 attendees
	Conduct evaluation survey	September-November 2014		Claudine / Joel/ Nalini	RDB	# of Households surveyed; % of surveyed community members with positive attitudes towards conservation of NNP	390 households to be surveyed